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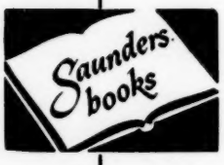

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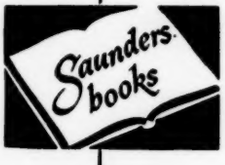

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THE JOURNAL
of the American Medical Association
Published Under the Auspices of the Board of Trustees
VOL. 160, NO. 14 CHICAGO, ILLINOIS APRIL 7, 1956
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PROBLEM OF DELAY IN SEEKING SURGICAL CARE

James L. Titchener, M.D., Israel Zwerling, M.D., Ph.D., Louis Gottschalk, M.D., Maurice Levine, M.D.
William Culbertson, M.D., Senta Cohen, Ph.D.
and
Hyman Silver, Ph.D., Cincinnati

• The reasons for procrastination in seeking professional attention were studied in 200 surgical patients. In 23 cases the patient had no opportunity to delay because he entered the hospital comatose or was brought in immediately after a serious accident, and in 11 cases information was insufficient. Of the 166 patients who did have opportunities to delay, 71 were classified as having done so in the sense that they had ignored obvious alterations of somatic structure or function that would have caused concern to a rational person in the patient's cultural milieu.

Nondirective interviews, projective tests, casework data, and follow-up studies in the 71 procrastinators revealed no significant differences between them and the other patients as to age, sex, intelligence, or psychiatric diagnosis. The findings did, however, support the hypothesis that delay results from a multiplicity of conscious and unconscious psychological factors operating before, during, and after the patient recognizes a sign or symptom. Cancer and disease in the genital area were frequent occurrences in the group who delayed. The complexity and difficulty of the problems faced by some patients are illustrated by details from a number of case histories.

The efficacy of any medical treatment necessarily depends upon the patient's willingness to seek medical advice, diagnosis, and treatment. Success of treatment in most cases is more likely when the patient reports the first sign or symptom to the physician, and successful therapy often becomes more difficult or even impossible as an illness continues without medical attention. Therefore, delay in seeking medical attention is an important factor in the aggravation of treatable disease.

Definition of "Delay"

We have chosen to define "delay," for the purpose of our study, as the procrastination of a person with an outstanding, discernible sign or symptom signifying, in his culture, a deleterious somatic change. The procrastination persists beyond the time that a reasonable person in the same culture would be expected to hesitate before reporting to a medical practitioner. Delay is indubitably a temporal concept, but we are convinced that the significance of delay is also relative to the kind and severity of the illness. For example, a man who attempts home treatment while avoiding medical advice for a recurrently inflamed ingrown toenail during a 12-month period has not manifested delay in our sense as seriously as one who has waited two days through repeated bouts of hematemesis before arrival at the physician's office. Thus the degree to which an individual actually or potentially endangers his health or life is one of the determinants of our meaning of delay. As implied in the definition, we also conceive delay to be relative to the patient's knowledge of somatic change and to the significance in his sociocultural milieu of such change. In one culture an alteration in the color of the urine may signify hematuria and be cause for considerable alarm, while in another less sophisticated culture it may signify only a change in diet or mean nothing at all. However, in evaluating delay it is necessary to determine whether the latter considerations serve as rationalizations for the avoidance of diagnosis and treatment or are the best the person could do in his environment. When we say that a patient has significantly delayed seeking medical advice, diagnosis, or treatment we are implying that he has experienced an obviously discernible alternation of his somatic structure or function and that such change would have been cause for concern to the rational person in the patient's culture and finally that, during the interval between the appearance of the sign or symptom, the patient has been subject to actual or potential peril. Danger is tangible when an

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This study was supported by a grant from the National Institutes of Health, Education, and Welfare.
Mrs. Jane Friedlander assisted in the compilation of statistics and preparation of tables and other data. Dr. Jerome Richfield, Research Associate (Commonwealth Fund, Philosophy) in the Department of Psychiatry, Cincinnati General Hospital, advised in the critical planning and evaluation of results of this study.

individual allows the growth of a cancer to proceed before reporting for treatment, whereas we consider the peril is potential when a man who has been advised that a hernia may incarcerate without treatment continues to temporize over a considerable period before accepting the advised treatment.

Review of Literature

There have been few systematic investigations of the causes and incidence of delay in seeking medical care. Harms and co-workers [1] interviewed 158 successive patients appearing with various forms of cancer. Delay was considered a factor when patients had had their symptoms for one month or longer before seeking treatment. Of the total, 2% of the patients reported within one month, 92% required two months or more, and 84% waited three months or longer, the median interval of the total being 8.46 months. In pursuing the causes of delay the authors asked patients questions to determine their knowledge of symptoms and to discover whether they appreciated the significance of the possibility of cancer as the basis for their complaints. They concluded that 56.9% failed to realize the significance of their symptoms, 10.1% avoided diagnosis and treatment because of the expense, 11.3% were simply "negligent," and 6.9% were unaware of any need for treatment at all.

A recent study reported from England by Aitken-Swan and Paterson [2] describes a high rate of delay in patients with cancer. These authors concentrated their interest on cancer of the breast, uterine cervix, skin, and mouth because the signs and symptoms of these ailments are noticeable early in the course of the illness. Of 2,700 patients with these types of cancer attending Christie Hospital, 45% delayed consulting their doctor three months or more and 17% delayed for one year or more. The study is based on brief interviews with 75 men and 239 women who delayed. Sixty-three were tested with the Wechsler-Bellevue intelligence scale. Patients were divided into those aware of their diagnoses and those ignorant of the possibility that they had cancer. The authors concluded that "ignorance" is a "normal" reaction. Of those patients who suspected their diagnoses, it was felt that about half "adjusted" to the threat of cancer via denial, suppression, and fatalistic acceptance of their illnesses. The "fear" group was concerned with the threat of surgery and hospitalization, knew unfortunate friends and relatives with cancer, or had "domestic difficulties" that enhanced their anxiety. Comparison of the Wechsler-Bellevue scores of the delayers with those of the immediate seekers revealed no significant difference.

Our argument with these previous investigations can be summarized in three points: 1. Each study relies upon ready acceptance of verbal replies to an interviewer's direct questions about the existence and causes of delay. Such a method requires that the patient be aware of the fact that he has delayed and that he know why he has behaved in such a manner. In our experience delay has seemed a complex form of behavior not completely understood or realized by the patient himself. 2. There are no attempts in either study to understand delay in the context of a patient's personality and emotional conflict over illness. 3. In each study there is failure to recognize a considerable artifact produced by the method of the investigation. In directly inquiring about delay in seeking medical care, there is inevitably an aura of disapproval that can often provoke in the interviewee a defensive attitude and a high incidence of rationalizations to explain the behavior.

A study [3] from the M. D. Anderson Hospital for Cancer Research, Houston, Texas, explores the "why" of delay in cancer patients from a social and psychological point of view. The sample consisted of 100 patients, including 50 who were prompt in seeking medical advice and 50 who delayed more than three months. In the investigation, relatively intense interviewing, projective psychological tests, and collection and analysis of social data were used. The authors found that the prompt patient tended to be young and middle class in life style. The delaying cancer patients were older and adherent to a lower-class value orientation. In analyzing medical-care habits, these workers found that in both groups the patients reported a willingness to get help when "something serious" was noted. The difference between action and inaction seemed to lie in the individual meaning of the word "serious." The prompt group was aware of the significance of their neoplastic illness, while the delayers' awareness was "suppressed . . . rejected or withdrawn from by members of the delay group." Though patients with cancer did not admit to any fear initially, depth interviewing brought admission of such emotion in 90%. In the prompt patients fear operated to mobilize resources and overcome inertia. The delayers' fear had a paralyzing effect. Fear in the latter case became diffuse and unreasoning, causing "rejection of the thought of danger." Enforced dependency in manifestly ill cancer patients commonly resulted in aggression and hostility. The prompt patients expressed dependency needs via intelligent cooperation with the physician, while the delayers resorted to child-like groping for security or rebellion against those upon whom they had to depend. The authors recommend that cancer education be redesigned to reach the lower-class, less educated groups.

Method

The present report concerns one aspect of a psychiatric survey of surgical patients. Two hundred patients admitted to the surgical service of a municipal general hospital were randomly selected during a 12-month period as subjects of the study by a method previously described.[4] On completion of the study, the 200 subjects were compared with the total admissions (3,656) of the same year and found to be highly representative with respect to age, sex, race, duration of hospital stay, whether or not surgery was performed, and type and severity of surgical illness. We have not found reason to believe that the year of the study differed significantly from any other of the past decade. Each patient randomly selected was seen as soon as possible after admission by one of two psychiatrists, as often as possible during admission, and then three to six months after discharge from the hospital. Interviews were directed toward comprehensive psychodynamic and diagnostic understanding of the patients' personalities. The interviews were nondirective and yet aimed to elicit facts and attitudes about the current situation and the person's life history. A pa-

tient was encouraged and allowed to talk about himself rather than answering predetermined questions. An attempt was made in each case to accomplish projective psychological testing, and a vocabulary test was used to estimate intelligence. Finally, a caseworker interviewed a relative or other informant during the patient's admission and again three to six months after discharge from the hospital. Upon completion of the collection of raw

TABLE 1.—*Percentage of Representative Sample of Persons Admitted in One Year to Surgical Wards of a General Hospital Who Delayed Seeking Surgical Care*

	No.	%
Insufficient information to determine presence of delay..	11	5.5
Did not delay.....	118	59.0
Patients who delayed.....	71	35.5
Total.....	200	100

data, three of us read through all of the material on each patient and made independent judgments on each with respect to delay and its causes as well as on other goals of the project. There was high agreement among the independent judgments, and, when there was disagreement, a consensus was obtained through discussion and clarification of the raw data.

Results

The figure presents the significantly high incidence of nearly all forms of psychiatric disorder among our randomly selected surgical population. It will be seen that psychiatric disorder was diagnosed in almost 90% of the group studied. Neurosis was established when patients presented or gave a history of neurotic symptoms substantially reducing capacity for work or interpersonal relations. Character and behavior disorder was diagnosed when there were inflexible and repetitive attitudes or behavior that were clearly maladaptive and interfered with the person's successful living or the happiness and security of his family. Table 1 summarizes the incidence of delay among our 200 surgical patients.

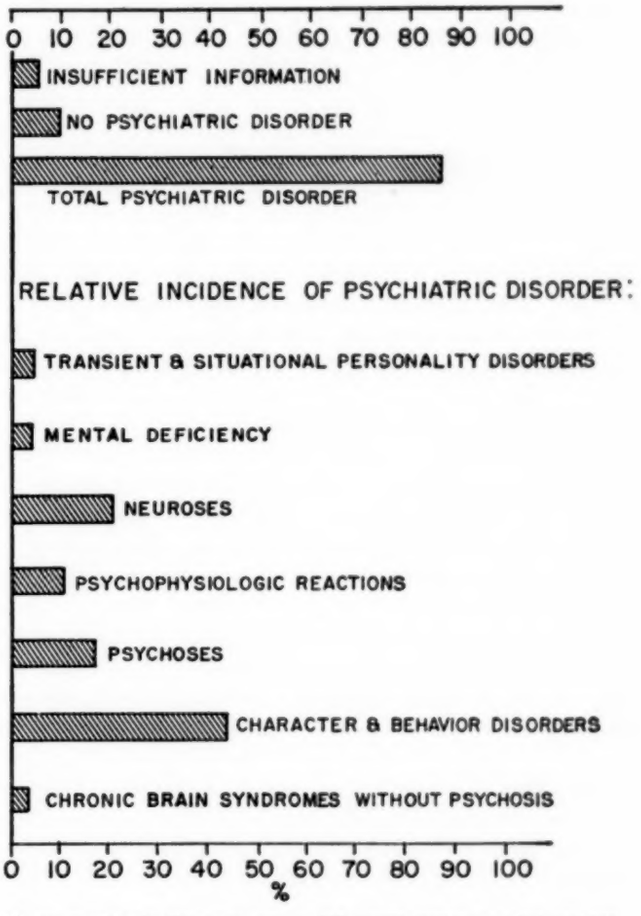
A second table is based upon recognition of the fact that many patients in an active municipal hospital have no "opportunity" to delay. They are struck down accidentally or by assault and are brought comatose and

TABLE 2.—*Percentage of Delaying Patients Among Those Who Had Opportunity to Delay*

	No.	%
Insufficient information to determine presence of delay	11	5.5
Patients who had no opportunity to delay (traumatized, comatose patients brought to hospital not of their own volition).....	23	11.5
Patients who had opportunity to delay.....	166	83.0
Total.....	200	100
Those who delayed among patients who had opportunity to delay.....	71	42.8
Patients who did not delay but had opportunity.....	95	57.2
Total.....	166	100

not of their own volition by police ambulance to hospital for emergency treatment. We have thought it important to subtract such cases from the total to arrive at a more meaningful figure for the incidence of delay (table 2).

The surgical illnesses presented by patients who delayed are of interest. Seventeen, or 22.5%, of the total number of delaying patients had various forms of cancer. The total number of cancer patients in our series was 24; thus only 7 of the patients with cancer did not delay and one entered comatose and died before information about delay could be obtained. Illness in the area of the genitalia was frequently associated with delay. Five patients had sizable and disabling uterine fibroids; three were suffering from severe functional uterine bleeding; two had ectopic pregnancies with prolonged painful symptoms; six males presented inguinal hernia with and without incarceration; and seven other patients manifested miscellaneous conditions in the genital area. Finally, nonmalignant neoplastic syndromes were significantly associated with the delay group. The above-mentioned entities do not complete the list of surgical illnesses found in the delaying group.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TOTAL PSYCHIATRIC DISORDER
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NEUROSES
PSYCHOPHYSIOLOGIC REACTIONS
PSYCHOSES
CHARACTER & BEHAVIOR DISORDERS
CHRONIC BRAIN SYNDROMES WITHOUT PSYCHOSIS
0 10 20 30 40 50 60 70 80 90 100
%

Major psychiatric diagnoses among 200 representative surgical patients.

Causes of Delay

Since completing the leg-work phase of our project, we have analyzed the data repeatedly for significant variables associated with delay in seeking surgical care. The following hypotheses are some one might form to explain the high incidence of this form of behavior in surgical patients. Some of these hypotheses are fanciful and offered only for the purpose of illustration. Some have appeared in the literature to account for delay. One originates from the present study.

1. "Delaying patients are young and foolish or old and fatalistic; age is a factor producing delay." Our findings do not support such a theory since age ranges are equally distributed in each group. The differences in age are not significant ($p = 0.40$).

2. "Women are fastidious and anxious about surgical treatment or men are convinced that surgical illness means weakness; gender is a significant factor causing delay." Our study finds men and women almost equally represented in both the delay and nondelay groups.

3. "The cost of surgical treatment is a factor producing delay." Our data neither confirms nor denies this hypothesis. All of our patients are from economically deprived strata, but the hospital is a municipal medical center to which all residents of the city can be admitted even though they cannot afford the fees. It is probable that some of our subjects failed to report earlier out of the shame at having to accept gratuitous treatment.

TABLE 3.—*Incidence of Psychiatric Disorder in Delay Group Compared with Nondelay Group*

	Delay, %	Nondelay, %	Significance of Difference, p
No psychiatric illness	7.8	5.0	0.50
Neurosis	27.8	30.0	0.50
Psychosis	16.7	19.4	0.50
Character and behavior disorder	45.5	42.5	0.98
Mental deficiency	2.2	3.1	0.60
Total diagnoses	100	100	

4. "Patients who delay are stupid; those who do not are intelligent or vice versa; degree of intelligence is a factor causing delay." Each group of patients were divided into four classes according to intelligence level. Chi-square analysis found no significant difference between the distribution of categories of intelligence in the delay and nondelay group ($p = 0.70$).

5. "Delay is a symptom of one or another psychiatric entity." From inspection of table 3, summarizing the data on incidence of psychiatric disorder, it can be seen that there was no significant difference with respect to major psychiatric diagnostic categories between delayers and nondelayers. Delay cannot be said, therefore, to be a symptom of any particular psychiatric diagnostic category.

6. "The kind and severity of illness suffered is important in causing delay." It has already been shown that certain surgical entities (cancer, illnesses in the genital area, etc.) are heavily represented among the delayers. We do not think that type of surgical illness offers a sufficient reason for delay but that this consideration is one aspect accounting for some of the behavior in question.

7. "Delay is multiply determined by psychological, psychodynamic, and emotional factors operating before, during, and after the individual's recognition of a sign or symptom of illness." Our findings support and elucidate such a hypothesis to explain delay in seeking surgical care and treatment.

Psychological Causes of Delay

The method of our study, employing nondirective interviews, projective testing, and casework data, has been designed to elicit unconscious, preconscious, and conscious attitudes, emotions, and determinants of behavior. We have chosen to approach the problem of delay by psychodynamic comprehension of our patients. We have attempted to list the etiological dynamic factors operating in each delaying patient. In most cases the answer given in reply to a direct question about delay did not wholly explain the behavior. If a person said that he preferred drugstore treatment initially, we usually found that he did so because of underlying emotional conflict.

Table 4 presents the commonest psychological determinants found in our cases and the incidence of each. Many patients are represented more than once, since more than one determinant may have been at work in a single case.

Fear of Punishment from Surgical Treatment.—Fear of punishment as a psychological determinant of delay is to be distinguished from the realistic expectation of pain or distress in diagnosis and treatment. Here we found a group whose expectation of pain or mutilation was far in excess of the degree appropriate to the actual stress. Such patients had in their make-up a deep-seated guilt feeling in conflict with unaccepted hostile impulses toward significant persons in their environment. For such hostile impulses they had been led by early experiences to expect retribution, and, when afflicted with surgical illnesses, they came unconsciously to believe that the day of judgment would arrive when they were strapped to the operating table. The fear of punishment became manifest in markedly enhanced tension about the pain to be experienced or the mutilation to be imposed by surgery, and by unnecessarily gruesome fantasies about the means and form of surgical treatment. One particular patient was a 45-year-old ruddy-faced, tubby man, with a repetitively cowering and whining attitude toward life and its stresses and with a history of having an inconsistently tyrannous father. He had been intermittently alcoholic and had an unstable work record. He had considered many times talking to someone about a plain and sometimes painful indirect inguinal hernia. In fact, a year before admission he was advised to seek treatment by the company physician or be discharged from employment. Interviews revealed a continuing struggle to suppress an insistant preoccupation with imagined danger to his testes during surgery. His unexpressed rage at authority figures and expectation of punishment for such feelings was inferred from interview data and projective testing. By the time of follow-up he was caught in a severe compensation neurosis and totally unable to work.

TABLE 4.—*Psychological Causes of Delay in Seeking Surgical Treatment**

	%
Fear of punishment from surgical treatment	26.0
Fear of death in surgical treatment	15.3
Reaction formation or overcompensation to dependent needs	13.7
Shame; wish to avoid exposure, being seen, or revelation of attitudes or parts of body unacceptable to the self	13.0
Suicidal wishes or resignation to fatal outcome	9.2
Iatrogenic causes	6.9
Ignorance of significance of symptoms	4.6
Secondary gain or the histrionic gesture as cause of delay	3.8
Other causes	7.6

* For definition of categories, see the text.

Fear of Death in Surgical Treatment.—The fear of death as a cause of delay in seeking surgical care may be considered an extension of fear of punishment in which the hostile impulses are perceived by the individual to be more intense and murderous, thus deserving the ultimate retaliation. Again the actual risks of surgery are exag-

gerated in fantasy, and anxiety is greatly accentuated. One patient was a superstitious although quite intelligent obese and hypertensive woman 50 years of age, who had long expressed her dependent needs vicariously by caring for hordes of children of working mothers at ridiculously low fees and at great personal sacrifice. She had been enduring a prolonged, mutually hostile relationship in her marriage and waited through three months of severe postmenopausal bleeding before submitting to a medical examination, which disclosed a very large fibroid. Interviews and projective material indicated that she was expectant of retaliation in the operating room commensurate with her own unconscious death wishes for the husband she had long supported. At the time of the follow-up interview, she was found to have resumed her former self-sacrificing mode of living.

Reaction Formation or Overcompensation to Dependent Needs.—We have encountered in our series a number of men and a few women whose life histories and current emotional conflicts indicate a deep urge to be cared for and supported but who feel ashamed about this. Their treasured concept of themselves, their ego-ideal, is of rugged and independent virility, the opposite of their deeper wish for dependency. Such men or women commonly interpret illness as a sign of weakness, especially in themselves, and when the first sign or symptom appears they are driven to deny both the existence of illness as a threat to their self-concept and the need for help in the form of diagnosis and treatment. One patient in our series was a 40-year-old policeman who highly valued virility, toughness, and independence and who could not accept his need for closeness with others and attention and support from his family, his superiors, and his parents. For six months prior to admission he assured himself that recurrent bouts of obvious hematuria signified "a cold in my kidneys" and expected the symptom to cease like a cold. When he finally reported for medical evaluation, a far-advanced carcinoma of the bladder was diagnosed. Following an operation and discharge from the hospital, the patient still bore the façade of toughness and invincibility to cover up his anxiety regarding the serious possibility of recurrence.

Shame. — Another group includes those who feel shame and wish to avoid exposure, being seen, or revelation of attitudes or parts of the body unacceptable to the self. This is another group of delaying patients who feel their self-concept threatened in another way by illness. They fear the eye of the examining physician. They fear that by discovering illness the doctor will know of their secret shame or enhance their guilt about past behavior. In this group there are delaying patients principally with illness in the genital area and with shame about sexual impulses. One such patient was a severe and unbending Negro woman of 39 who was ashamed about her chaotic and promiscuous sexual past. She was anxiously reliant upon her capacity to continue sexual relations to hold the affection and support of a common-law husband. For five months she concealed from everyone but herself the fact that she was experiencing a daily bloody vaginal discharge made worse by coitus. An employer who noted weight loss and weakness finally forced the patient's attendance at a clinic, where grade 2 carcinoma of the uterine cervix was diagnosed. The patient later refused surgical treatment, fearing that the loss of her uterus meant sexual impotency and, thus, separation from her husband. X-ray and radium therapy was instituted, and five months after leaving the hospital the patient was found to be severely depressed and withdrawn, reiterating her determination not to accept surgical removal of the uterus should such be advised.

Suicidal Wishes or Resignation to Fatal Outcome.—Some of the delaying patients were individuals suffering severe and deepening depression prior to the onset of their illness. Often they had suffered separation or severe emotional deprivation and were involved in unresolvable conflict over their bitter rage provoked by frustration and their growing guilt over the inner perception of such feelings. Their emotional disturbances became manifest in the signs of melancholy, apathy, indifference, irritability, feelings of worthlessness, and a pessimistic view of the future. Occasionally suicidal wishes were overtly expressed, and, when the illness requiring surgery made itself known, they resigned themselves to passive suicide and death. Most of these patients were brought feebly protesting to the hospital by friends or by relatives. One such patient was a lonely and embittered 60-year-old widow living with her sister and brother-in-law. She felt herself a burden and resented the irritation she sensed in her relatives. She silently suffered pain, very frequent nausea, vomiting, and finally regurgitation for 6 to 10 months before being brought forcibly to the hospital by her sister. Carcinoma of the stomach was diagnosed, and after gastric resection the patient experienced a profound psychotic depression.

Iatrogenic Causes.—In the group who delayed for iatrogenic causes we have included not only those whose treatment was delayed by inaccurate diagnosis or dangerously faulty prehospitalization treatment (of whom we can say we found very few) but also those who were delayed by a disrupting, poor relationship with the referring physician. There are many complicated aspects to the phenomenon of a disturbed doctor-patient relationship. Sometimes there was mutual hostility between the physician and his patient, with a resulting interference with the normal process of diagnosis and treatment. In other instances strong, positive sympathetic feelings toward the patient irrationally prevented the physician from making a diagnosis with poor prognosis and caused him to act on the basis of wish fulfillment, treating the patient as though he or she had a less serious condition. In two cases in our series the physicians who were close emotionally to their patients treated them for menopausal symptoms when one was bleeding from advanced uterine cervical carcinoma and the other manifesting ascites from an ovarian carcinoma. It was inferred, though not proved, that in each case the otherwise competent physician was too moved by the suspicion of gloomy prognosis to employ his full diagnostic prowess.

Ignorance of Significance of Symptoms.—Some delayers in our series, remarkably few in number, were most probably unaware intellectually that they had severe illnesses requiring medical attention. Such patients were poorly educated, rigid persons and usually isolated individuals who could not obtain help from others in the

recognition of their illnesses. One such patient was an aged Negro man who had lived alone in a one-room tenement apartment and on relief for 20 years. He had no relatives, and only his disinterested landlord could serve as an informant. He had noted a gradually painful, enlarging, and fungating growth on his cheek for three months, which he had treated with a hot, wet compress. He decided to visit a drugstore. The pharmacist's prescription of a variety of ointments failed to halt the growth of the mass for another three months, at which point he was sent to the hospital, where he received x-ray treatment for a very large carcinoma of the parotid gland. The patient died very soon after transfer to a hospital for the chronically ill.

Secondary Gain or the Histrionic Gesture as a Cause of Delay.—There are many in present-day civilization for whom illness may be a source of some pleasure of relief from cares, a means of maneuvering others and regaining their affection, or simply a way of making more dramatic a life that seems dull. To such persons professional medical treatment can mean the end of being taken care of and that one's hand is called; thus, there is motivation to prolong the uncertainty and disability and avoid a cure. One patient was a tempestuous and histrionic young white woman who, to be constantly assured of the affection of others in her environment, tested them repeatedly by their responses to her attention-seeking maneuvers. She made the most dramatically out of nausea, vomiting, and attacks of right upper quadrant pain, suffering through each episode with the magnificent courage of Camille before finally accepting medical advice during an undeniably acute attack of cholecystitis. Minor and less frequent symptoms were continuing at the time of follow-up interview four months after leaving the hospital.

Other Causes.—All the motives for delay not classifiable elsewhere but that usually occurred in combination with one or more of the above were placed in one category. A few patients who delayed were psychotic, and their motives for delay were too difficult to define. Others presented economic and religious or cultural causes, but in such cases it was necessary to examine the material to discover whether the stated motives were rationalizations to cover other determinants of delay. Finally there were a few cases that simply resisted classification. One such patient was a circumspect but stubborn and aggressive middle-aged Negro man who plainly fractured his ankle at work. He laid down his tools and resolutely limped home, took a bath, and changed his clothes before finally limping on to the hospital with his grosssly swollen and inevitably painful extremity.

Comment

It is obvious to anyone in the practice of medicine that procrastination by the patient is very likely to result in aggravation of his illness and often precludes curative treatment. Our data outline a second dimension to the aggravation of illness by delay in seeking surgical care. The patients who delay have most frequently made a less healthy adjustment to their illnesses, for by our definition delay is maladaptive behavior that serves as a compromise defending the patient against anxiety for the present at the price of greater distress in the future. An analysis of the convalescent experience of the 71 patients who delayed revealed that six months after leaving the hospital, 24 were suffering new neurotic symptoms or manifesting new neurotic behavior or an aggravation of preexisting neurotic symptoms or behavior. Twenty patients were unchanged or improved with respect to personality adjustment, and information was not available in 27 cases. The problem of the effect of delay on personality adjustment is complicated by the following sequence: The delay indicates a difficult adjustment to somatic illness and in addition leads to an aggravation of the illness, making adjustment to the stress more difficult and more likely to result in a worse emotional disturbance. A further complication arises from the possible internal aggravation of physical illness by emotional disturbance; thus, the somatic defenses against physical illness are weakened and function less adequately in the presence of emotional disorder.

This study seems to have greatest pertinence in the fields of medical education of the public and preventive medicine. Our findings indicate in contrast to the other studies cited that, as far as the dissemination of information goes, the medical profession and the medical publicists have done their job well. Such a conclusion is supported by the low incidence of ignorance as a major cause of delay. In our sample of surgical patients, the individual who was totally ignorant of the general significance of a sign or symptom was extremely rare. Also in support of the conclusion about medical education of the public was the finding that almost all patients had knowledge about the treatability of surgical illness, including cancer, when that illness was diagnosed in its early stages. Though medical education has reached most of the populace in the form of straight information, our data suggest that there is still much to be done to overcome other more subtle psychological determinants of delay that are expressed in anxiety and the defenses against it. We believe our findings indicate that medical education for the public will have to take into account that people resist diagnosis and treatment seldom because they are ignorant of the significance of a change in themselves but oftener because the appearance of a sign or symptom sets off a sequence of maladaptive and neurotic behavior resulting in irrational procrastination. We are aware that our findings do not offer easy solutions to this problem but indicate that an extensive review and study of the effects of public education and a search for methods of improving techniques, are in order. Perhaps changes in this situation are more likely to result from the education of the physician than from disseminating facts to the public. If the physician can be sensitive to the underlying psychological determinants of delay in his patients, there is a greater chance that plans for therapy will include attention to the factors producing resistance to treatment.

Summary

A group of 200 randomly selected patients, constituting a representative sample of all the patients (3,656) admitted during one year to a municipal surgical service, were studied by means of nondirective interviews, projective tests, casework data, and follow-up studies three to six months after discharge from the hospital. The inci-

dence of delay in the series of patients studied amounted to 31% of the total. When patients who had no opportunity to delay were not included in the calculation, the incidence of delay was 42.8%. There was no significant difference between the delay and nondelay groups with respect to age, psychiatric diagnosis, sex, or intelligence. Cancer and illnesses in the area of the genitalia were frequent occurrences in the group who delayed seeking surgical diagnosis and treatment. The findings of the study support the hypothesis that delay is a form of behavior multiply determined by conscious and unconscious psychological factors that are in operation before, during, and after the patient's recognition of a sign or symptom.

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THE HEART, PROGRESS, AND VISION OF MEDICINE IN THE TWENTIETH CENTURY

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• In the space of a third of a century, the physician has participated in victories over malaria, typhoid, cholera, dysenteries, appendicitis, pneumonia, and tuberculosis. There now is hope of virtually eliminating from the American scene all the infectious diseases and others besides. New techniques of immunizing, restoring, and rehabilitating people are in prospect.

But there still is the need for physicians with sober and investigative minds and kind and understanding hearts. Misbehavior of all sorts, mental illness, and suicide may decline as new drugs are developed, their use is better understood, and good will, tolerance, and sympathy increase among the general population. The strong family group of a century ago provided the love, unity, security, and moral and religious guidance that are still needed in challenging and conquering the innumerable tragedies of life.

More progress has been made in the field of medicine in the first half of the 20th century than took place in the previous period of more than 6,000 years from the beginnings of medicine in the earliest known civilizations. With our increased knowledge of the human body, and with our increased armamentarium, it is still the relationship between the physician and the patient that is central in the practice of medicine. In this relationship the "heart" of the physician plays an essential part. I am not speaking of the physical organ but of that which embraces the intellect, the emotions, the intentions, and the conscience. In the Bible it is stated that the heart understands, discerns, and believes—functions of the mind; that it trusts and fears—functions of the emotions. The great literature of the world refers to the heart as something that purposes, rebels, conquers, surrenders, or stands steadfast; these are functions of the will, and so the heart includes all of man's intentions. That is not all. This concept includes something within us that may be made callous or kept tender, something that can restrain, approve, or condemn—functions of the conscience.

Bacon wisely wrote, "All human actions take their color from the complexion of the heart just as the landscapes take their changing hues from the light." From the doctor's heart comes the power to triumph over failure, weariness, misunderstanding, and discouragement. Out of the doctor's heart comes his attitude toward his profession and his patients, be it selfish or generous.

Past Experiences

Looking back over 33 years of practice, I can remember much discouragement and many defeats. I can recall the plague of malaria, with its coma, chills, fever, and drenching sweats. I once saw 200 patients a week with malaria; now I see one every three years, and then it is usually an ex-serviceman who has contracted the condition overseas. I remember the Saturday afternoon pellagra clinics, where each week we saw 50 or 60 persons suffering from this condition that was the scourge of the South; now I have one patient every five years with pellagra, and then it is only in the mildest stages. How well do I remember the dread of typhoid and the odor of the typhoid sickroom; the cholera infantum; the bacillary and amebic dysentery that could not be cured; and the killing cramp colic, which we now know was appendicitis, that we thought could be relieved by such agents as castor oil, salts, and mild mercurous chloride (calomel), which brought relief for a few hours but gave peritonitis a tremendous advantage over the surgeon in his battle for human life.

I remember the reluctance with which I viewed the approaching winter, for I knew that before spring 15 patients, including several close friends, would die from lobar pneumonia. Now, thanks to antibiotics, I have not seen a fatal case of lobar pneumonia in more than 12 years. How helpless I felt in cases of septicemia, how inadequate in cases of severe hypertension. I saw many patients dying from tuberculosis who could have been saved by early diagnosis, many persons crippled by heart disease who could have continued as productive members of society if they had received prompt supervision.

Future Hopes

Such were the old defeats of medicine—many of them defeats that gave little or no hope of any ultimate victory. Then we felt helpless, but today we can walk into the

Revision of Chairman's address, read before the Section on General Practice at the 104th Annual Meeting of the American Medical Association, Atlantic City, June 8, 1955.

sickroom with confidence, knowing that often a little ampul or vial half the size of one's thumb contains drugs that can conquer diseases formerly thought hopeless. There are still medical enigmas, but the progress made in the first half of this century is truly remarkable.

This progress could not have been predicted at the beginning of the century, and it may be that developments in the next half-century will surpass what can justifiably be predicted now. For example, with the extended use of vaccines, antibiotics, multiphasic screening tests, and other techniques, it may be possible to virtually eliminate from the American scene all the human infectious diseases, including tuberculosis, rheumatic heart disease, diphtheria, pneumonia, septicemia, syphilis, and gonorrhea. Cancer may be successfully treated with radioactive compounds that have affinity for tumor cells or by a virus vaccine that will localize in tumor tissue and destroy cancer cells without attacking normal cells. In the future we may not be so interested in treating the affected organ but may concern ourselves with the ultimate subdivision of the human body, the cell itself; in the opinion of some scientists, viruses are intracellular parasites dependent on the enzyme system in the individual cell; therefore, to cure the virus pathology the remedy must penetrate the cell itself. It may be that at the turn of the century the common cold and even more serious respiratory virus infections will be only memories.

The surgery of tomorrow will undoubtedly be even more specialized than that of today, and victories greater than the heart surgery of today will await the highly trained men in that field. It may be that the eye surgeon of tomorrow will be able to restore sight in cases in which such feats are unthought-of today. Perhaps in the future the more common cases of abdominal surgery and less complicated fractures will be handled successfully by the general practitioner. The family physician may also be the family psychiatrist, for he is already fortified by being acquainted with many of the average family problems and mental traits. A new field, space medicine, may develop and concern itself with the survival of man under completely foreign conditions. It may be that starvation and famine will be prevented by synthesis of foodstuffs, vitamins, and minerals. Portable electronic devices may make it possible for deaf mutes to speak; television may allow transcontinental consultation between the attending physician in the patient's room and a distant specialist. Transfer surgery of vital organs may be accomplished by hypothermal surgical techniques not ignoring the delicate blood and nerve supply of these organs. Through the development of drugs and through increased good will, tolerance, and sympathy among the general population, there may be a marked decline in mental illness.

It may be that by the end of the 20th century insulin will be given in tablet form to control diabetes and effective treatment will have been found for hypertension, arteriosclerosis, degenerative heart disease, pernicious anemia, and leukemia. Senility may be minimized by finding a way to control the cholesterol that determines the age of our arteries. Lastly, it may be that the Salk vaccine, which is a killed-virus vaccine, will be replaced by a living modified virus vaccine, which, with the use of a smaller amount of antigenic material, will provide a higher degree of immunity and longer lasting protection.

Heart of Medicine

But, in spite of all the additional knowledge we may have on Dec. 31, 1999, there will still be a need for physicians with sober and investigative minds and kind and understanding hearts; we will still need to treat people with sympathy and pain with drugs. The ancient Norsemen said, "Vain is the strong oak in our ships, without strong hearts in our men." This might be paraphrased to apply to present-day, and future, physicians: "Vain are the advances in diagnosis and therapy, without men strong in understanding to interpret and apply them." In the past physicians have been held in high esteem by the American public. To continue to merit this confidence in the future, we should guard the health of the heart of which I have spoken as scrupulously as that of the physical organ. Many of the ills of our present day may be considered conditions of the "heart." At present, 17,000 Americans a year die by their own hand, millions of sleeping capsules are swallowed each night, liquor and narcotics numb the reason of our teen-agers and stimulate their bravado; as a physician, I would prescribe a return to the strong family group of a century ago, with its love and unity an unequaled source of security and with the family altar a moral and religious guidepost.

I can think of no better way to close than with the words of Dr. Frank Crane's [1] "Prayer of the Physician":

We pray, O God that we may have absolute intellectual honesty. Let others fumble, shuffle and evade, but let us, the physicians, cleave to the clean truth, assume no knowledge we have not and claim no skill we do not possess. Cleanse us from all credulities, all fatuous enthusiasms, all stubbornness, vanities, egotism, prejudices, and whatever else may clog the sound processes of our minds. These are but dirt; make us the living personalities as aseptic as our instruments.

Give us hearts, but let our feelings be such as shall come over us as an investment of power, to make our thoughts clear and cold as stars, and our hands skillful and strong as steel. Deliver us from professionalism, so that we may always be human, and thus minister to sickly minds as well as to ailing bodies. Give us constant realization of our responsibility, for people believe in us and into our hands they lay their lives. Let us, of all men, be sober and walk in the fear of eternal justice. Let no culpable ignorance of ours, no neglect nor love of ease, spoil the worth of our high calling.

Make our discretion strong as religion, so that the necessary secrets of souls confiding in us may be sacredly kept. Give us the joy of healing. We know how far short we may be of being good men; but dear God, make us good doctors. Give us that love and eagerness and pride in our work without which the practice of our profession will be more fatal to us than to those under our care. Give us due and decent self-esteem, that we may regard no man's occupation higher than ours, envying not the king upon the throne so long as we are prime ministers to the suffering.

Deliver us from playing at precedence, from hankering for too much praise and prominence, from oversensitiveness, and all such forms of toxic selfishness. Give us just remuneration for our endeavors; not so little that we cannot have the leisure we need to put quality into our service; not so much that we shall grow fat in head and leaden in heart, and forsake our sense of ministry for soft indulgence. Give us courage but hold us back from overconfidence. Let us discharge the duties of our office that we shall not be ashamed to look any man or woman in the face and when at death we lay down our task, may we go to whatever judgment that awaits us, strong in the consciousness that we have done something toward challenging and conquering the innumerable tragedies of life. Amen!

1. Crane, F.: Four Minute Essays, New York, Wm. H. Wise & Company, 1919, vol. 9, pp. 139-142.

NATIONAL MEDICAL CIVIL DEFENSE PLANNING AND REQUIREMENTS

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• *Assembly of 200 improvised hospitals for federal stockpiling was undertaken in order to provide focal points for medical care in the event of attack on our country's vital areas. It is likely that more than 6,000 hospitals ought to be kept available.*

There is a need for training of professional nurses in mass casualty care techniques; a civil defense nursing program is concerned with this and related problems. The dentist can also play a vital role, and the American Dental Association has cooperated in stimulating dentists to train for emergency casualty services.

Training courses are necessary for personnel at all levels, including first aid. Many problems arise in this area, especially that of evacuating hospitals.

Preparation for radiological defense includes five distinct training programs and the purchase of much indispensable apparatus. For defense against chemical and biological warfare, systems of detection as well as of treatment are necessary; the attack may be not only on people but also on animals and farm crops. The sanitation program is especially concerned with mass evacuation of target cities, radioactive fall-out and shelters, and the restoration of damaged facilities. In addition to a program for blood and plasma expanders, there must be a stockpiling of other medical supplies, the goal for 1956 being sufficient supplies for a 3,500,000 casualty level.

This paper is based on the report of the Health Office, Federal Civil Defense Administration, to the Committee on Civil Defense of the Council of National Defense, American Medical Association, of April 2, 1955. In order to cover the activities of the Health Office thoroughly, I have arbitrarily divided the work of the office as follows: (1) hospital program, (2) nursing program, (3) dental program, (4) training activities, (5) delegations, (6) radiological defense, (7) chemical warfare defense, (8) sanitation program, (9) communicable disease control and biological warfare defense, (10) federal contributions program, (11) national planning, (12) blood program, and (13) federal medical stockpile. In each program, I will attempt to point out what we consider requirements that future action must satisfy.

Hospital Program

The improvised hospital developed by the FCDA was displayed both at the American Hospital Association meeting in Chicago, October, 1954, and at the American Medical Association Annual Meeting in Atlantic City, June, 1955. The hospital's facilities have been streamlined to care for 200 patients on an emergency basis. Insofar as further procurement, storage, and distribution are concerned, the medical advisory committee of the FCDA unanimously passed the following resolution on May 25, 1955:

> WHEREAS, the Improvised Hospital as developed by the Health Office of the Federal Civil Defense Administration admirably meets the requirements for a focal point of medical care in the event of attack on our country's vital areas; and whereas the number of these units presently available or allowed is fewer by thousands than those required and that can be staffed for their stated use; and whereas the proper allocation of the units to the communities demands careful planning; now therefore
> Be It Resolved that the number of Improvised Hospital Units be substantially increased and be it further resolved that an adequate number of those presently on hand and allowed, and those to be acquired in the future, be made available for storage in appropriate proximity to the critical target areas; and be it further resolved that a limited number of these units be made available to the appropriate authority for demonstration and training in the critical target area cities, provided that these units and those assigned to storage be subject to regular inspection in order that they may be available for use in the event of disaster or attack.

We are preparing with haste to comply with the intent of this resolution. Assembly of 200 of these improvised hospitals for federal stockpiling is almost completed. It is expected that the hospitals ordered by the states will be delivered shortly; states that have improvised hospitals on order are: California 20, Connecticut 10, Maine 1, Massachusetts 7, Maryland 20, Ohio 6, Washington 6, Hawaii 1, New Hampshire 2, Virginia 2, Georgia 1, and Wisconsin 6, a total of 82.

We are advised that some states are procuring improvised hospitals through their own procurement mechanism. The federal procurement of 531 more improvised hospitals for this fiscal year (1955) has been authorized. Our budget request to Congress for the 1956 fiscal year includes an appropriation for 100 additional improvised hospitals. A representative of the American Hospital Association has been added to the administrator's medical advisory committee. Two meetings have been held recently with the American Hospital Association, and plans are being developed to work closely with the association in the stimulation of interest and participation by state and local hospital authorities in the civil defense program.

We must overcome resistance to acquisition of an adequate number of improvised hospitals for civil defense needs, wherever such resistance lies. Our country's needs for an estimated 6,000 such hospitals will have to be revised upward in the light of newer weapons, newer attack capabilities of the enemy, and newer civil defense measures; however, we have made hardly a dent in the estimated number of needed improvised hospitals, which will be the focal points of medical and allied professions in time of civil defense emergency. Perhaps, unwittingly, we have been guilty of trying to get a job done without asking for as much assistance from the professional associations as is needed. By the same token, this problem belongs to all of us right down to the local medical so-

Director, Health Office, Federal Civil Defense Administration, and Medical Director, U. S. Public Health Service.

Read before the Third Annual National Medical Civil Defense Conference, Atlantic City, N. J., June 4, 1955.

ciety, so the medical profession should not be reticent in demanding that the government procure these hospitals in numbers that are realistic in relation to the enemy's capability.

Nursing Program

The objective of nursing in civil defense is to provide nursing services to civilians under conditions of enemy attack. Nursing service includes direct care to patients, nursing administration and supervision, education and training, and public health nursing. Civil defense nursing service, to be effective, must be planned and coordinated with all other health and welfare services. If nursing personnel are to be effectively utilized in times of disaster, guide lines must be developed for professional nurses, practical nurses, nurses' aides and attendants, and volunteer auxiliary workers.

The civil defense nursing service at the federal level must work with and coordinate civil defense activities with other FCDA health services, the military and other federal nursing services, the American National Red Cross nursing service, and the national nursing organizations. These activities consist of planning and developing nursing services for mass civilian casualties in the event of enemy action. To do this requires modification of usual nursing methods and techniques necessary to complement medical care; promotion and development of educational programs for professional and nonprofessional nursing groups; assistance in the developing and dissemination of guide materials and information on civil defense nursing and casualty care; and provision of advice and guidance to, and coordination of, the civil defense nursing activities of regional, state, and territorial government civil defense nursing programs.

Currently the civil defense nursing program is concerned with the following projects. 1. The Office of Defense Mobilization and the American Nurses' Association are developing a method for obtaining statistical records of professional nurses by critical target areas. 2. The American Nurses' Association and the National League for Nursing committees on national defense are working to implement nursing services in national defense. The FCDA nursing service is represented on these committees. 3. The FCDA and the American Red Cross are developing a suggested guide for "Local Planning for Nursing in Disaster." They are also developing programs to increase training of men and women in home-nursing, first-aid, and nurse-aide functions. 4. Preliminary planning has been instituted on training of nurses for mass care of casualties with the American Nurses' Association and the National League for Nursing committees on national defense, the Army, and the FCDA Staff College. 5. Nurse representation on state and local civil defense agencies and committees has been encouraged.

What do we see as civil defense requirements of nursing services for the future? Like few other services, nursing service has tremendous responsibilities in the noncasualty as well as the casualty field. Evacuation of critical target areas is essential to save lives, but evacuation brings with it risks and hazards and crowding that are foreign to most of our population. Large numbers of our population must be trained in fundamental nursing techniques to assist themselves, their families, and the evacuated population that may move in with them. This task of training lay persons in nursing techniques is a big one. The FCDA can and will assist the American National Red Cross on the federal level, but physicians in the cities, towns, and villages are the people who are most vitally concerned. It is with commendation that I mention that the Woman's Auxiliary of the American Medical Association has devoted time during its meetings to the problem of home nursing, particularly the teaching problem. I am confident the Auxiliary can provide a great stimulus in this important field. Casualty care, in the magnitude that we foresee in event of attack on this country, calls for nurses to use abilities not only in services commonly accepted as nursing duties but quite possibly in some, or many, of those duties usually performed by physicians. The need for training of professional nurses in mass casualty care techniques is readily apparent.

I would like to digress here for a moment and say something about the Medical Education for National Defense program. The reason for my digression will be obvious, I believe. The staggering realities of nuclear war are beyond the imagination of most men who have not conditioned their minds along these lines. Medical students and their professors are not exceptions to this statement. MEND is a program that attempts to meet this problem by conditioning the future physicians to think of casualties in terms of thousands, yes, hundreds of thousands, rather than in terms of the three or four persons in an auto wreck.

The eventual success of the MEND program seems assured by the eagerness with which our medical schools are entering into the program, the number entering each year being limited only by the availability of funds. Consideration of a similar program in dental schools is being discussed. Although perhaps the abbreviation is not as appropriate as MEND, why not a NEND program—Nursing Education for National Defense? The field is probably more fertile than even the medical field, and a cadre of professional nurses oriented to the problems of civil defense graduating from professional schools each year would be a great boon in our preparedness program.

Dental Program

The FCDA dental program was begun July 1, 1951, by the addition of a dental consultant to the staff on a part-time basis. Notable progress has been made. A technical manual, TM-11-9, "The Role of the Dentist in Civil Defense," was produced early and has since been revised. Our consultant has worked with and through the American Dental Association to stimulate dentists to train for emergency casualty services. This program is based on the assumption that, in the event of a major catastrophe, the number of medical and nursing personnel would not be adequate to care for all those who would be injured. Therefore, auxiliary medical aides must be developed, among which the 90,000 dentists constitute a very important and available group. With well-directed training, dentists can perform a most valuable service.

Our dental consultant has written many articles on civil defense that have been published in dental journals. He has appeared before state and national meetings and has monitored civil defense exhibits at major meetings in order to stimulate dental societies everywhere to engage their membership in first-aid training and in advanced medical emergency services. Two courses for dentists have been held at the FCDA Staff College, with an attendance of 67 and 76 respectively. A civil defense Dental News Letter, which is circulated to over 500 dentists, is being issued periodically. Arrangements have been made for the release of films on emergency casualty care, made by the Navy, to be loaned to dental societies as a part of their civil defense training. Plans are being laid for the incorporation of courses in civil defense methods into dental school curriculums. Currently a program of dental participation in radiological monitoring is being developed.

Training Activities

A new training outline for first-aid system personnel has been compiled. The instructor guide manuals, comprising detailed lesson plans for the 8-to-10-hour training sessions, will be released for general distribution as each is completed. Three special courses have been held since November, 1954, at the Staff College in Olney, Md., for key Public Health Service personnel, including bureau chiefs, medical officers in charge of Public Health Service hospitals, regional medical officers, reserve officers called to temporary active duty, and others. The Health Office has participated in two other civil defense training programs for PHS reserve officers.

The PHS conducted a series of civil defense conferences in eight regions through cooperation with the American Medical Association, the Association of State and Territorial Health Officers, and the FCDA. From March 24 through April 22, 1955, eight conferences were held in Washington, D. C., Denver, San Francisco, Kansas City, Mo., Chicago, New York, Atlanta, Ga., and Dallas, Texas. The PHS invited all state health officers and asked that they bring members of their staff and also representatives of state medical associations, for whom the PHS paid travel expenses and a per diem stipend. State civil defense directors were also invited to attend.

The Health Office is working closely with the Training and Education Office of the FCDA in the preparation of a staff college course on evacuation. The many problems relative to the proposed evacuation of hospital patients are being currently reviewed by the FCDA. The Committee on Civil Defense of the American Medical Association's Council on National Defense has been asked to give thought to this problem of hospital evacuation. Should we not make plans for strategic evacuation similar to the British plan? What patients must be left behind due to the seriousness of their illness? What hospital personnel should remain with these patients? Answers to some of these questions seem obvious, yet, there is a surprising amount of variation of thought among physicians on the question of patient evacuation. Trial runs must be made in evacuating hospitals. The manual "Psychological First Aid in Community Disasters," compiled at the request of the FCDA by the American Psychiatric Association, has recently been distributed to state and local civil defense organizations. Copies are available to individual physicians, state medical associations, or local medical societies through your local civil defense organization.

Delegations

Last year the FCDA delegated certain responsibilities to other federal agencies. Later assignments by these agencies to their constituents brought the FCDA Health Office into direct delegation relationships with the PHS, the Food and Drug Administration, the Office of Education of the Department of Health, Education, and Welfare, and the Agricultural Research Administration of the Department of Agriculture. Delegation relationships are progressing. Satisfactory working agreements between the Health Office and the delegate agencies in areas of radiological defense, biological warfare defense, chemical warfare defense, and sanitation are in preparation. The question of further delegations is being considered. The Bureau of the Budget recently recommended that "Consideration should be given to FCDA making a delegation of responsibility for the emergency hospital program to the Public Health Service because of its responsibilities for the health of the Nation and its qualified staff resources."

Recommendation no. 26 of the Commission on Organization of the Executive Branch of the Government (Hoover commission) recommends that consideration should be given to appropriate delegations of operational authority for directing medical care during and immediately following attack on the continental United States. The task force on federal medical services recommended to the commission that such delegation be made to the Department of Defense in close cooperation with the Department of Health, Education, and Welfare, and the FCDA.

Radiological Defense

During the past year the radiological defense program has been considerably increased. The Advisory Bulletin no. 179, "Residual Radiation in Relation to Civil Defense," has been issued, and an accelerated instrument procurement program has been started. The instrument program is now in existence rather than in the developmental stage. We still do not have satisfactory specifications for the procurement of a high-range survey instrument, but, since this is a specialty instrument, we no longer feel the inadequacy we felt when we had no satisfactory instruments of any sort. In general, the instrument procurement program is as follows: We have let orders for some 3,500 low-range survey meters, 8,000 medium-range survey meters, 22,000 dosimeters (electroscopes), 1,850 dosimeter chargers, 80,000 dosimeters (phosphate glass), and 160 dosimeter readers. These instruments are being distributed to FCDA establishments in quantities adequate for operational use; the remainder are being sent to federal warehouses in the various regions. Negotiations are under way to provide for a widespread, detailed distribution, still within the custody and control of the federal government but with storage in such locations that the instruments can be

distributed immediately to the ultimate user (radiological monitor). Specifications for the high-range instrument are being developed under an engineering contract.

By delegation, the PHS is preparing to assume training responsibilities in radiological defense at the federal level, which includes assistance to states and communities in conducting radiological defense training. Certain operational research responsibilities are being assumed by the PHS under the FCDA delegation no. 1. The spring series of nuclear tests is expected to add considerable significant data to our knowledge concerning damage from thermonuclear weapons.

The radiological defense studies, program 38 of the civil effects test group, included five separate technical projects. Two of these were training programs and three operational. An on-site training project was attended by 24 persons having state and local radiological responsibilities. They were at the test site for a period of about four weeks, participating in field exercises and technical projects. The off-site training project was conducted by the California Office of Civil Defense for about 50 of its regional and local radiological personnel. This project operated off-site, about 50 miles from the test site, for a period of about 10 days. The three operational projects included monitoring techniques, obtaining data on the relative intensity inside and outside of houses, and the evaluation of radiological defense instruments. Interim technical reports on each of these projects were prepared at the conclusion of the test series and will be published as weapon's tests reports within the next year.

Tentative approval has been given for the addition of one radiological defense officer in each FCDA region and the addition of radiological defense personnel in the national office. During the year, the first of a series of technical reports in the health field was published on a radiological defense subject, FCDA TR-11-1, "Effects of Nuclear Explosions upon Drugs." Some of the requirements as we see them in the radiological defense field are increased personnel at all levels of operation—federal, state, and local; encouragement of basic research in this new field; and considerable operational research. We have estimated the cost of instruments ultimately needed by our nation for adequate civil defense coverage at about 50 million dollars.

Chemical Warfare Defense

The FCDA is essentially a planning and coordinating agency, and, under Public Law 920 of the 81st Congress, the administrator is directed in part to "Utilize to a maximum extent the existing facilities and resources of the Federal Government." To implement this, the FCDA has delegated certain technical fields of responsibility of the Health Office in chemical warfare to the Department of Health, Education, and Welfare. The scope of delegation no. 1 was general in reference, and the details are being worked out in conferences at planning and technical levels. We feel that the whole civil defense chemical warfare program is included in detection and identification, individual protection, medical care, training, and industrial hazards.

Detection and Identification.—The standard chemical corps detection kit, M9A2, was felt to be too complicated in operation and too inclusive in identification to be of use to the FCDA. A kit developed by the Chemical Corps for the Navy appears to meet the FCDA requirements for detection of nerve gases and the vesicants, and, since it is about to be procured by the Department of the Navy, it will probably be standardized by the FCDA and a joint procurement order placed.

It must always be assumed that a potential enemy will use new agents. The Chemical Corps has a supporting kit, M-10, which was designed to augment the detection kit M9A2. This kit is far too complicated for use except by trained technical personnel, which civil defense agencies cannot expect to have available in any number. Also the kit, because of its mobility, is limited in scope. During World War II the Chemical Corps, in collaboration with the national defense research committee, established many research centers in private and state universities to work on the more complicated problems of chemical warfare identification. These were scattered throughout the 48 states and could serve as centers for rapid identification support. Already several of the key personnel in this earlier program have been approached and have indicated their willingness to cooperate and assist in present identification problems. The experience of these university laboratories in handling toxic chemicals should be most valuable.

Individual Protection.—Commercial fire and rescue masks have been tested by the Chemical Corps for protection against war gases. With minor changes, which have been brought to the attention of the manufacturers, these have proved satisfactory, and these masks are included in the federal contributions program. The organizational protective mask (V-800) was developed by the Chemical Corps for the FCDA and is believed suitable for civil defense workers not requiring the heavy duty mask. Seventy of these have been procured and loaned on memorandum receipt to the state civil defense directors for inspection. As a result, requests for some 10,250 have been received from the states. These are now being procured, and an additional 2,000 are being procured for FCDA personnel, making a total of 12,250. The procurement contract permits an increase should the states require more; the states are being so notified. The civilian protective mask (E-52), developed by the Chemical Corps for the FCDA, should give sufficient protection against all agents, including protection against inhalation or ingestion of fall-out particles, to permit evacuation or transportation to shelters. It has passed engineering tests, and we plan to procure 5,000 in five sizes (1,000 of each) for field testing on approximately 1,000 civilian families. It is anticipated that field testing of this mask will begin next fiscal year, and the masks should be ready for procurement by early 1957 at a cost of $2.00 to $2.50 each. The question of their distribution is under study.

The Chemical Corps is developing an infant protector with transparent top and three sides. The fourth side is made of diffusion board, which eliminates a canister and pump but gives good protection from all chemical, biological, and radiological agents. It is designed for small infants and children up to 6 years of age. It can be extended for larger children with respiratory troubles

that would prevent them using a mask. It is expected that field testing of this item will be conducted along with the E-52. Costs will vary greatly according to quantities procured.

Medical Care.—Atropine self-injection units for treatment of nerve gas casualties continue to be procured under the federal stockpiling program. They will also eventually be supplied with all types of protective masks.

Training.—A five-day training course in chemical warfare defense was conducted in June, 1954, by the Chemical Corps at Fort McClellan, Ala. Twenty-two civil defense personnel attended. The results were most successful, and it is planned to determine how this training can be implemented so as to reach a broad group of civil defense workers. Manuals on defense against chemical, biological, and radiological attack have been purchased from the Chemical Corps and distributed at regional, state, and local levels. These manuals are titled: (1) "Field Behavior of Chemical Agents"—TM 3-240, (2) "Military Chemistry and Chemical Agents"—TM 3-215, (3) "Decontamination"—TM 3-220, (4) "Treatment of Chemical Warfare Casualties"—TM 8-285, and (5) "Defense Against CBR Attack"—FM 21-40.

Industrial Hazards.—It is planned that the American Chemical Society be asked to assist in a study of the chemical plants in target areas that might become a hazard by release of toxic chemicals. This will be coordinated with the Industry Office of the FCDA. When the problem is better understood, the PHS will be asked to recommend the necessary precautionary measures.

Sanitation Program

The major problem areas in the civil defense sanitation program are related to the exigencies of: (1) mass evacuation of target cities, (2) radioactive fall-out and shelters, and (3) rehabilitation and restoration of damaged facilities. Sanitation problems are magnified when large groups of people are thrown suddenly into primitive living conditions. This we can expect when populations evacuate cities to less populated areas. The increased threat of communicable disease, as epidemics borne by water, food, insects, and rodents, must be counteracted by planning for use of uncontaminated water, safe emergency disposal of excreta, emergency pasteurization of milk, emergency housing sanitation, insect and rodent control, and food protection.

The hazards of radioactive fall-out, along with bacteriological and chemical warfare agents, necessitate provision of shelter and the protection of air intakes and water and food supplies from radioactive and other contaminants. The provision of a nominal quantity of drinking water may be the difference between death or survival under such conditions. The emergency handling of bodily wastes and protection of water and food from contamination are vital safeguards against the outbreak of communicable diseases. The restoration of sanitation controls; the rehabilitation of public water and sewerage facilities; the decontamination (chemical, biological, and radiological) of water, food, and other objects; and insect and rodent control are all major problems that we believe will be encountered in the rehabilitation of cities. The sanitation staff of the Health Office is vitally concerned with the solution of these problems. With delegation of specific civil defense health responsibilities to other federal agencies, particularly to the PHS and the Food and Drug Administration, an accelerated program has been developed to solve specific problems in the sanitation field and to institute a training program.

Special attention is being given to the following areas: (1) review of the implications of new special weapons development—offensive and defensive—from the standpoint of sanitation planning; (2) adaptation of existing and new methods and procedures to decrease the vulnerability of target populations to special weapons attack, particularly as related to water supply protection and food protection, including processing, warehousing, and distributing; (3) development of operational readiness plans, including mobile support for affected areas, with emphasis on sanitation aspects of mass evacuation and radioactive fall-out and group shelters, including stockpiling of selected emergency sanitation supplies and equipment; (4) promotion of a training program for sanitation personnel at the federal, state, and local levels; and (5) maintenance of close liaison and coordination with federal agencies to which pertinent civil defense responsibilities have been delegated.

To round out the civil defense sanitation program, a competent full-time sanitary engineer is needed on the staff of the FCDA regional offices to bring about a much needed emphasis on the sanitation phases of civil defense at the state and local levels. Preparation of new technical manuals and revision of existing manuals related to sanitation must be accomplished in order to reflect current civil defense philosophy and outline an action program.

Communicable Disease Control and Biological Warfare Defense

The program for defense against biological warfare is divided into defense of men, defense of animals, and defense of crops. Adequate basis for the defense of man is found in the private medical practice and health departments of all the target areas; however, auxiliary health personnel are needed to supplement the peacetime communicable disease services within the community. For example, the need for water, milk, and food sampling in times of threatened use of biological warfare will tax the community far beyond its peacetime requirements. Auxiliary personnel must be available to assume this additional load. This appears to be a logical spot for science students and teachers to fit into the civil defense picture in their communities. On the national level, the FCDA has delegated the responsibility for planning, research, and development of a biological warfare defense and communicable disease control to the Department of Health, Education, and Welfare and the United States Department of Agriculture. Conferences at a technical level are in progress with the PHS to formulate a working agreement delineating respective spheres of activity and responsibility in biological warfare defense and communicable disease control. Similar negotiations are to be undertaken with the Food and Drug Administration of

the Department of Health, Education, and Welfare to coordinate their activities. A PHS officer, the former veterinary consultant of the FCDA, has been detailed to the United States Department of Agriculture to maintain and guide the animal program.

The following research and training projects relating to communicable disease control and biological warfare defense have been initiated in the PHS: (1) immunization investigations on basic questions leading to improvement of vaccines and other immunizing procedures; (2) detection, prevention, and control of airborne diseases; (3) laboratory techniques for rapid identification of biological warfare agents; (4) water supply protection; and (5) milk and food protection.

FCDA stockpiling of biological and chemotherapeutic agents now is based in part on the requirements for biological warfare defense and communicable disease control. Plans are being made to establish a joint FCDA-PHS technical committee to advise in this area. The American Public Health Association manual on "Control of Communicable Disease" has just been reissued, and the FCDA has purchased 12,000 for distribution; this publication is revised every five years. It is hoped that the special problems of the control of communicable disease under emergency conditions will be included in the next edition, due to be published in 1960. FCDA TM-11-10, "Civil Defense Against Biological Warfare," has been widely distributed. FCDA H-11-2, "What a Farmer Should Know About Biological Warfare," has been released through the United States Department of Agriculture as well as FCDA channels. FCDA filmstrips and filmographs on various aspects of the defense against biological warfare are almost complete. These are nontechnical and directed at lay groups. Biological warfare exhibits and sound films on animal diseases have been cooperatively developed and acquired by the FCDA and the United States Department of Agriculture; these are used widely.

Federal Contributions Program

The total FCDA health matching-fund program as originally projected ran roughly to 35 million dollars for the federal share. It is estimated that through 1954 better than 15 million dollars was provided by the federal government in matching funds. Thirty states and roughly 140 localities participated in the health matching-funds program during the fiscal year 1954. Applications requested matching funds for supplies and equipment in the following health areas in the order named: first-aid system, radiological defense, hospital system, chemical warfare defense, blood program, and emergency sanitation; 145 project applications were approved. The total value of approved applications was a little more than 1 million dollars, distributed among the regions as follows: region 1, $425,000; region 2, $194,000; region 4, $168,000; region 7, $165,000; region 3, $21,000; region 5, $16,500; and region 6, $5,400 (figures rounded). Two-thirds of the total monies matched went to four states: New York, Wisconsin, California, and Ohio, with $280,000, $145,000, $122,000, and $115,000 respectively.

In the contributions program for the fiscal year 1955, 27 states and territories have had project applications approved, as of April 30, 1955, for a total dollar value of $150,953. This is about 10% of the amount ($1,312,755) allocated to the states in the health program. It is expected, however, that the bulk of the applications for 1955 will come to us just before the end of the fiscal year, during May and June. Thus far, 24 first-aid stations, no 200-bed hospitals, 7,025 blood-recipient sets, 12,323 units of blood expanders, 1,386 gas masks, 1,054 dosimeters, and 508 survey meters have been reported approved to the states. Final figures for the year must wait until the end of the fiscal year. As of April 30, 1955, the regions (exclusive of territories) rank in the following order in terms of dollar value of applications approved: (1) region 2, $56,949; (2) region 3, $21,185; (3) region 7, $15,465; (4) region 4, $15,204; (5) region 1, $8,153; (6) region 5, $1,422; and (7) region 6, $1,069. The territories rank as follows: Hawaii, $23,623; Puerto Rico, $4,106; and Alaska, $3,777.

Comparing the health and special weapons defense federal contributions program for 1955 with that of 1954, there is in the 1955 program more emphasis on developing operational readiness in support areas and on ensuring the availability of equipment and supplies for use in or by attacked areas. Matching funds for health-training courses have been increased in number and now cover four areas: first-aid system, blood collection, radiological monitoring, and emergency sanitation. For the first time, the states are offered the possibility of matching funds for health supplies and equipment in two new fields—biological warfare defense and communicable disease control, and emergency sanitation.

National Planning

The Federal Civil Defense Administration has been developing plans for interstate and interregional aid in all areas. In the field of health resources, this planning has led to an effort to determine the health support capabilities of the civil defense programs of the states. The present approach is to measure broad categories of emergency medical facilities, equipment, and supplies in the states and counties. These categories include not only the civil defense first-aid station systems, the improvised 200-bed hospital groups, the blood-collection units, the blood derivatives and plasma expanders, and the other medical supplies and equipment in the custody of states or the federal government, but also the medical resources that may be found in the medical wholesalers, retailers, manufacturers, jobbers, and other sources of supply throughout the country. Our staff has been discussing the idea that, with anticipation of a greater casualty load than we have planned for in the past, perhaps we should inventory supplies and sources of supply of goods not considered medical, but supplies and sources that can be converted in time of emergency. For example, the entire stockpile of bandages and the ability of bandage supply houses to manufacture bandages may be insufficient for the emergency needs following attack. Sheet manufacturers might readily convert their warehoused supplies and their manufacturing processes to supplying bandages.

As the plan is developing, the Federal Civil Defense Administration will collect the data on health resources

in a uniform reporting system—most likely on IBM cards—and will have this data available for both planning and reporting purposes. Along with the national inventory of our medical supplies, there is also an effort being made to be prepared to make a postattack bomb damage assessment, utilizing the Univac machines or some other "mechanical brain." The data collected by our inventories will be cranked into the machine so as to enable us to come up with as accurate a calculation as possible of the impact of an enemy bomb attack, showing what has survived for our use in combating the results of enemy destructiveness. This project is still in process and is developing fairly rapidly.

TABLE 1.—*Estimated Utilization of Shock Treatment Units per 1,000 Surviving Casualties During First Seventy-Two Hours*

	500 Fatally Injured	200 Moderately Injured	300 Seriously Injured	Total
Blood	5	25	645	675
Blood derivatives	5	20	355	380
Plasma expanders	45	355	500	900
Total	55	400	1,500	1,955

Blood Program

Where do we stand on whole blood, blood derivatives, and plasma expanders at this time? Our program of supply is based on five guiding principles: 1. Whole blood is the agent of choice in treatment of shock, but adequate quantities will probably not be available in a civil defense emergency. 2. Clinical experience indicates that a severe burn can be handled adequately in the first 72 hours if the colloid requirement is equally divided between plasma expanders and a blood derivative. 3. We must be prepared to use minimal, instead of optimal, shock treatment units in the first 72 hours. 4. Experience of the military demonstrated that plasma expanders provide satisfactory shock therapy when followed by whole blood in more serious cases. 5. The subcommittee on blood of the division of medicine, National Research Council, recommends an individual should receive no more than a liter of povidone (PVP) during his lifetime. With these principles in mind, we have used figures that have been compiled through clinical experience and have estimated the transfusion requirements of each 1,000 surviving casualties to be three units over three-weeks' time.

TABLE 2.—*Transfusion Requirements per 1,000 Surviving Casualties*

	1st 72 Hr.	4th to 21st Day	3-Wk. Total
Whole blood	675	825	1,500
Blood derivatives	380	20	400
Plasma expanders	900	200	1,100
Total	1,955	1,045	3,000

On the basis of this requirement estimate and using the assumption of 5 million surviving casualties, the first 72-hour requirement of whole blood is 3,375,000 units, or as much whole blood as this country uses in seven to eight months. In the federal program, we have stockpiled 2,059,000 transfusion sets—bottles, tubing for donor and recipient, typing serums, and shipping containers. The states have stockpiled 2,550,000 sets. Between these two stockpiles, there are enough sets to take care of 4,609,000 transfusions, 61% of the number of sets needed for 5 million surviving casualties for three weeks.

This is only part of the picture; operational readiness to collect 47,000 units of blood each hour for the first 72 hours after attack is needed if whole blood is to be supplied in the quantities necessary. In Advisory Bulletin no. 184, it is recommended that right now each community must prepare to collect blood at three to four times its normal capacity by (1) selecting and equipping alternate (stand-by) sites for emergency bleeding in safe locations, (2) recruiting and training auxiliary personnel for 24-hour operations, and (3) procuring an 8-to-10-hour reserve of expandable supplies.

Federal Medical Stockpile

Present plans of the stockpiling program allow enough equipment for collecting and administering whole blood to care for approximately 3,500,000 casualties. As for the status of the blood derivative stockpile, in the fiscal years 1952 and 1953 enough plasma was stockpiled to care for over 3 million casualties. Since that time we have stockpiled 220,000 units of serum albumin. In fact, when it becomes possible to convert our stockpiled plasma to normal human serum albumin, we will do so, thus eliminating the threat of homologous serum jaundice from the stockpile and contributing to the ease by which a blood derivative can be given to the casualty.

Proposed procurement of dextran in 1956 brings the federal stockpile of plasma volume expanders up to about a 3,500,000 casualty level. Included in the stockpile are 1,200,000 bottles of povidone, which we plan to use in terms of the National Research Council's recommendation of not more than one liter per person, and 3,150,000 units of dextran. As for the federal stockpile picture on intravenous and oral feeding, actually the stockpile at the present time includes only fluid for intravenous use, approximately 13,500,000 liters. We are in need, at the present time, of a material to use in nasogastric feeding. Beside having the necessary nutritional components, the material must have a relatively long shelf life, require minimal storage requirements, and be administered with little attention from the medical attendants. The National Research Council has recently supplied recommendations on this problem. We anticipate that soon we will be asking manufacturers to bid on the specified material.

As for the status of the stockpile of improvised hospitals, it is readily apparent that we lag far behind the general stockpile level in the improvised hospital field. This is, of course, of primary concern to us. Backup supplies for aid stations and hospitals give a more gratifying picture than the stockpile picture of improvised hospitals. Our proposed 1956 fiscal year procurement brings these supplies to a 3,500,000 casualty level.

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MOBILE MEDICAL SUPPORT FOR CIVIL DEFENSE

1. FIELD TRIAL

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• Help for survivors in a nuclear blast area must come from the periphery. Consequently it depends on organized mobile groups from the surrounding region. Such a unit, planned to include first aid for 250 casualties, was given a field trial in "Operation Mercy."

Four hospitals willingly agreed to supply equipment for the four operating teams, three resuscitation teams, the sorting station, and the burn and postoperative ward. The local civil defense organization called on volunteer sources in the community, and physicians, nurses, medical technicians, and medical students were mobilized. Transportation for equipment and personnel was by means of private cars, buses, laundry trucks, and small vans. Boy Scouts and high school students cooperated by acting as casualties to the number of 250.

The sequence of events, from the unannounced surprise alert until the "pack up and return" signal, lasted nine and one-half hours into the night. There was much confusion, but no one was hurt.

Cooperation was found to be enthusiastic when people are asked to participate in a specific activity. The organizing and implementing of even a modest disaster unit was found to require a tremendous amount of attention to detail, but the results were gratifying.

Large problems require adequate solutions. Sometimes, however, it is necessary to break a big problem into small units before any solution can be achieved. The medical aspects of this country's civil defense problem have been presented in urban communities in terms that dwarf the means available for meeting the anticipated casualties of an atomic explosion. For example, how could a city like Houston, Texas, care for 100,000 seriously injured persons if its hospitals were decommissioned by the blast? If the hospitals were intact, how could 4,000 beds be expanded to accommodate 100,000 casualties? Faced with disruption of all facilities, how well would any indigenous medical disaster unit function? Perhaps it is an admission of inadequacy to confess that we do not now know how such a group of casualties can be cared for by civilian groups. It has been shown, on paper, what is required, but we are frankly skeptical that any such organization could ever be set into motion. Moreover, it appears that this inability to cope with medical civil defense problems of such staggering proportions has been responsible for the lag in active preparation in almost every large city in this country.

Medical Plan of Harris County Medical Society

The Harris County Medical Society, after wrestling for 18 months with the problem of organizing itself to care for 50,000 to 100,000 casualties locally, finally concluded that the only practical means of approach would be to break the problem down into smaller units. It was decided that a unit sufficient for the triage, resuscitation, and emergency surgery (nontransportables) of 250 casualties within a six-hour period was as large an undertaking as could be accomplished. If this seems ridiculously small and inadequate, one can only suggest that the critic undertake a field trial of a larger unit and then return for additional critical discussion. "Operation Mercy" was designed to be a self-contained unit of medical personnel, supplies, transportation, communication, and liaison of sufficient resources to handle the casualties found in a given sector of a neighboring city following the explosion of a bomb at its geographical center. Medical care was planned to include initial first aid to 250 casualties, sorting as to severity of injury, definitive emergency surgical intervention where indicated, and selective evacuation to distant permanent hospitals. Every attempt was made to confine all planning to activities in this single sector, presuming that other cities in the surrounding region would provide similar medical care for other sectors, thereby encircling the area of destruction. This concept, then, is an effort to divide the enormity of the problem into units small enough for adequate understanding and solution by medical planners. If one considers all of the problems in a 4-mile to 8-mile radius from nuclear blast Ground Zero in a 360-degree circuit, he can scarcely begin to make adequate plans for medical care. If, however, several organized groups near the periphery of such a blast area and each is asked to care for casualties in a 10-degree to 30-degree zone at 5 miles from Ground Zero, conceivably the immediate needs of the stricken city could be handled reasonably well.

From the outset it was clear that the disaster unit should be organized along military lines. Since the appointment of the first military surgeon, perhaps in the day of Ambrose Paré, there has been widespread adoption of the theory of taking medical personnel and equipment as close to the location of the casualties as possible. As transportation and ordnance evolved, medical care was brought further and further forward to provide im-

From the Harris County Medical Society.
Read before the Third Annual National Medical Civil Defense Conference, Atlantic City, N. J., June 4, 1955.

mediate emergency attention, after which casualties were evacuated to a safe and permanent-type hospital some distance from the activity producing the casualties. From this concept came the field hospital, the evacuation hospital and the distant base hospital. During the Korean conflict, further elaboration of the forward phases of this chain of evacuation came with widespread use of the battalion aid station and the divisional clearing stations as the points of triage to classify the severity of injury, followed by rapid movement of the most seriously wounded to a mobile Army surgical hospital unit capable of movement almost as rapid as that of the battle line. This system of early definitive surgical intervention lowered the Korean mortality rate to 2.4%, compared to a mortality rate of 4.5% in World War II, where slower evacuation methods were used.

In a civilian disaster, no fluid battle line exists—the damage usually occurring at a focal point. Tornadoes, severe fires, and industrial explosions can reproduce in miniature what nuclear weapons can do in a massive way. Proved methods, however, ought to work as well with civil disaster casualties as they have in the care of military casualties. Certainly they could work no less well than the lack of any organization that has been so evident in recent natural disaster situations. Accordingly, "Operation Mercy" was so designed that all personnel, medical supplies, and supporting materials could be mobilized within one hour, assembled, formed into convoys, transported to the disaster city, organized into a sorting station and a surgical hospital, and function for a six-hour to eight-hour period before requiring any additional supplies or relief. Within such a period secondary aid presumably could arrive from distant areas. "Operation Mercy," organized as a function of the Harris County Medical Society, was completely planned, executed, and evaluated within a 31-day period from March 24 to April 25, 1955. The short time was deliberately designed to create a sense of urgency about the project such as might naturally develop in a time of national crisis. With such a time limit, organization had to proceed quickly.

Supplies.—Four of Houston's large hospitals were requested to supply the necessary medical equipment. The administrators of Jefferson Davis, Methodist, M. D. Anderson, and Veterans hospitals willingly agreed to supply equipment for the four operating teams, three resuscitation teams, the sorting station, and a burn and postoperative ward. They also agreed to provide means of sterilization in the field, a complete pharmacy, mobile x-ray department, and blood bank. Each hospital was able to lend these materials without prejudicing its usual operations. It was found that the value of these materials amounted to $250,000. There was some concern lest valuable materials be lost, but interest in the project made complete cooperation possible. After the trial it was determined that materials lost out of the entire supply were valued at less than $50.

Personnel.—Plans were made to utilize the services of 31 physicians, 33 nurses, and 63 medical technicians. Four equivalent but different people were assigned to each task in order that the notification system would have a greater chance of finding at least one person for each job without difficulty. For educational purposes, about 200 medical students were used, half of the number as casualties and the others as aids, stretcher bearers, messengers, and observers. Most of the jobs they did could be assumed by any group of volunteers of college age.

Transportation.—The local civil defense organization, with considerable previous experience in this area, called on volunteer sources in the community. Laundry trucks and small vans were obtained to move the equipment in convoy and later to serve as ambulances. The personnel were expected to use their own cars; buses were secured to transport the student-casualty group. Policing and convoy control were assumed by cooperating police and sheriffs' departments. The city of Houston furnished two mobile power generators, a water tank truck, and a fire department lighting truck.

Disaster Location.—Beaumont, Texas (population 93,715), a city 90 miles away, was selected as the target site. In it are located many refineries and other industrial activities. Excellent cooperation was received from the local civil defense organization in planning a realistic operation. The International Derrick and Equipment plant was selected as the site of a large sabotaging explosion. Theoretically, six other similar explosions occurred in other plants to tax all the medical facilities in the community beyond their limit. A garage-type building, used as a furniture warehouse and located several hundred yards away, was selected as the casualty-sorting station. A one-story elementary school, with 11 large rooms, located eight blocks away was designated as the site of the emergency hospital. The local police and fire departments volunteered to escort traffic and to block intersections crossed by the ambulance shuttle.

TABLE 1.—*Types and Number of Casualties*

Types of Injuries *	No.
Chest injuries	13
Abdominal injuries	13
Central nervous system injuries	19
Extremity injuries	33
Major lacerations	85
Vascular injuries	2
Maxillofacial injuries	8
Ophthalmic injuries	4
Uncomplicated thermal burns	73
	250

* One-third of all injuries except last group were complicated with thermal burns.

Casualties.—The cooperation of 150 Boy Scouts and high school students of Beaumont was secured. They agreed to wear old clothes, to get "dirtied-up," and to act as casualties. The Jefferson County Medical Society volunteered to instruct the casualties regarding the nature of their "wounds" and to attach "diagnosis-cards" designating the specific injury to the volunteers. The remaining casualties were medical students from Baylor University. The 250 casualties designated were in proper proportion [1] as might occur in a nuclear blast (table 1).

The field trial was scheduled for an unannounced alert between April 11 and 16. While early specific arrangements had to be made by the transportation division and by police, the majority of the medical personnel were uninformed and were surprised when at 6:30 p. m., Friday, April 15, the 23rd day of planning, the command to proceed was received from civil defense headquarters and the notification system was set into operation. All personnel were notified within 30 minutes. Upon notification they communicated to the command post their willingness to proceed immediately to the assembly point. By 7:30 p. m. the majority of the group, some 400 to 500 people, were present at the assembly point.

TABLE 2.—*Sequence of Events*

Time	Activity
6:30 p. m.	Medical unit director received alert
6:35 p. m.	Operations assistant received alert; started fan-out notification system
6:49 p. m.	First physician arrived at assembly point
7:00 p. m.	Notification and telephone report-back of medical personnel complete
7:20 p. m.	Advance party departed from assembly point, including hospital commanding officer, sorting station commanding officer, Red Cross welfare and communications officer, engineer, and aides
8:03 p. m.	1st serial of convoy departed—including 90 casualties, sorting station team, Harris County Emergency Corps, litter bearers, supplies and equipment for sorting station and one operating room, and various civil defense officials
8:30 p. m.	2nd serial of convoy departed—containing bulk of supplies, ⅔ of hospital staff, and unit commander
9:15 p. m.	3rd serial of convoy departed—containing remainder of supplies and personnel; this could have left earlier except for police-spacing regulations
9:20 p. m.	Advance party made radio contact with Beaumont police and arranged escort
9:45 p. m.	Advance party arrived at sorting station site
10:00 p. m.	Advance party arrived at hospital site
10:30 p. m.	Personnel and equipment for sorting station arrived
10:50 p. m.	1st serial convoy supplies arrived at hospital
11:10 p. m.	Dextran and morphine arrived at hospital from civil defense stores in Lake Charles, La.
11:20 p. m.	2nd serial convoy materials arrived at hospital
11:22 p. m.	1st patient admitted to sorting station
11:30 p. m.	3rd serial convoy materials and personnel arrived at hospital
11:40 p. m.	1st patient admitted to hospital
11:45 p. m.	Hospital all actively in use; sorting station instructed to send 12 patients
12:30 a. m.	Report received by hospital commander concerning availability of hospital beds in Houston; 129 immediately available in the 4 participating hospitals only
1:00 a. m.	Arrangements completed for use of railroad car for rail evacuation to Houston
4:00 a. m.	Final patient handled; signal given to "pack up and return"

By this time an advance party of two cars had been dispatched containing the chiefs of the sorting station and hospital, the records supervisor, the evacuation officer, the engineer, the chief of communications, and a Red Cross welfare officer. Power generators proceeding independently arrived about the time the advance party did.

The 116 vehicles were divided into three serials. Civil defense furnished communications at the assembly point, in convoy, and between sorting station and hospital. Mobile field telephones and Bell mobile radios were used for these purposes. The three convoys proceeded approximately 30 minutes apart, requiring two and a half hours en route to Beaumont. The first convoy contained personnel and equipment for the casualty-sorting station. The second and third contained the personnel and equipment for the emergency hospital. By the time each convoy arrived at Beaumont, the advance party had laid out the sorting station and hospital and had tacked up neatly lettered signs (previously prepared), so that those unloading equipment would know where to place it.

The Harris County Emergency Corps handled the first aid of the casualties and was supported by Explorer Scout units, who worked as litter bearers. Some 275 litters were taken in the convoy. Red Cross in the two cities furnished two active canteens and a number of volunteer workers in the records division of the sorting station. The sorting station went into operation 30 minutes after arrival. The hospital was ready to perform major surgery 45 minutes after arrival. An ambulance shuttle was instituted between the sorting station and the hospital as soon as the hospital reported it was ready to receive casualties.

Disposition of patients admitted to the sorting station showed 120 evacuated to hospital by ambulances, 54 held at sorting station, and 42 (or more) evacuated directly to Houston hospitals. Evacuation from both sorting and hospital was by railroad baggage car. Such a car was sent out on a siding by the Missouri Pacific Railroad, was actually loaded with patients, and could have been moved to Houston but did not actually do so. The four participating hospitals in Houston were able to promise 129 hospital beds immediately upon arrival of the rail car and could have emptied many more if needed.

Refrigerated whole blood (mostly O, Rh positive) was brought from blood banks in Houston, and additional amounts were drawn locally from volunteers. Red Cross channels could have produced 1,000 units of serum albumin from depots in Waco, Texas, Kansas City, Mo., and St. Louis and within one hour from notification would have had it en route by air to Beaumont. Dextran was sent from the civil defense stores at Lake Charles, La.; 300 units arrived in Beaumont before the convoys did. In the emergency hospital sterile packs were opened, patients were prepared on the operating table, and operating personnel were gowned and gloved. A gas-fired field sterilizer was put into operation, and instruments were sterilized between "operations." While radiological monitoring was done on all patients for practice sake, no effort was made to introduce the factor of radiation effects in this initial effort. Each casualty was numbered, and his simulated injuries were described on a tag. As each patient was admitted to the sorting station his serial number was recorded on his medical record, similar to the Army's field tags. All treatments were noted on the patients' tags, and at the close of the exercise all tags were collected and each tag studied and graded in comparison to a standard treatment developed for each of the 250 casualties during the early planning stages. Grading of treatment showed good, 73%; fair, 19%, and poor, 8%. Records show 216 casualties were admitted and treated. Only 192 tags were available for grading, 55 others being lost. "Fair" and "poor" often represented too much attention to a fatally injured patient at the expense of others who might have been salvaged.

Comment

The units were in actual operation for about four and one-half hours. The actual care of this many casualties would probably have required at least twice this time. A summary of the sequence of events is given in table 2. Fortunately, and indeed remarkably, no one was hurt in the demonstration, and all vehicles returned safely without a single accident of any kind. Many valuable lessons were learned from having actually carried out the field trial. We shall include both the new problems encountered as well as those we had previously anticipated. 1. The notification and assembling system worked extremely well. Only one senior surgeon was lacking to assume charge of one of the resuscitation teams. 2. We had failed to provide an adequate communication system between the command post at the assembly point (the school auditorium) and the convoy assembly area on the parking lot. 3. The assembly of supplies by the hospitals was excellent. By the time the trucks arrived at each hospital the material was packed and waiting on the loading docks. 4. When the various vehicles arrived at the convoy assembly point they were not adequately identified. Great difficulty was experienced in forming them into the appropriate serials so that the personnel who was subsequently to use the equipment could be matched with their supplies and sent off together. It was apparent that someone who knows the nature of the medical organization should have been assigned this task. Adequate lighting should have been provided, preferably with a fire department floodlight truck. 5. All vehicles in convoy should have been clearly marked with white civil defense flags on both front fenders. Failure to do this, together with inadequate police escort for certain of the convoys (advance party and second serial) slowed up the progress through the city and allowed "joy-riders" to become inserted into the convoy. 6. Someone thoroughly familiar with the supplies should have been assigned the task of supervising the unloading. This was well done at the hospital but not at the sorting station. 7. Communication between the hospital and the sorting station is absolutely essential. We had walkie-talkie communication that functioned occasionally and with frustrating inconvenience. 8. It is imperative that various groups be identified in some manner, either with a distinctive uniform or distinctive headgear. Even when individuals know each other personally they may not recognize their civil defense assignment. The commanding officer at each station must be easily identified, and he in turn must be able to identify key people. 9. By maintaining the command post in operation at the initial assembly point the uncalled persons on the roster (four having been designated for each position) could be called and assembled into a second supporting team. Other hospitals could be called upon for supplies and equipment. Conceivably a third and even a fourth unit could be mobilized if supplies were made available through civil defense stockpiles.

The report of the findings of the experienced medical judges employed to evaluate medical aspects of the operation appears elsewhere in this issue (page 1211).

Summary and Conclusions

The Harris County Medical Society in cooperation with the Houston and Beaumont civil defense organizations demonstrated the feasibility of organizing and placing into operation a mobile medical disaster unit sufficient for the care of 250 seriously injured casualties within a period of six hours. All supplies and personnel were obtained locally, and no funds were appropriated for the exercise. The entire operation was planned and executed within a 23-day period. Within five hours after the unannounced alert, all units were functioning at the scene of the disaster 90 miles away. Certain generalizations appear warranted. 1. Aid for any large city devastated by disaster depends upon the availability of mobile medical disaster units of some type obtained from all of the larger communities within a 250-mile radius of the stricken city. 2. When asked to participate in a specific activity, the medical profession and the hospitals are not apathetic about their civil defense responsibilities but, on the contrary, are enthusiastic and cooperative. 3. The organization and implementation of even this modest disaster unit is a major undertaking requiring a tremendous amount of attention to detailed planning. 4. The results of "Operation Mercy" were gratifying indeed. The availability of trained and experienced medical personnel familiar with the operation of military hospitals suggests that the major problem is not that of providing more professional knowledge regarding the handling of casualties (important as this is) but is one of organizing and implementing a plan for the proper utilization of this reservoir of skilled persons.

Baylor University College of Medicine, Texas Medical Center (Dr. Olson).

1. Symposia on Care of Mass Casualties, Washington, D. C., Army Medical Service Graduate School, Walter Reed Army Medical Center, 1954-1955.

Surgery in Patients with Cirrhosis.—Improvements in methods for controlling infection and hemorrhage have resulted in a more favorable prognosis for patients with cirrhosis. Many such patients now live long enough to develop additional complicating diseases which require emergency or elective surgery. The marked latency of cirrhosis continues to present difficulties in diagnosis. Many cirrhotic patients are [subjected] to exploratory operations for presumed carcinoma or obstructive jaundice before definitive and accurate diagnostic survey have been performed. The more frequent use of liver-function tests will serve to detect the presence of cirrhosis in the majority of cases. These tests, when interpreted in the light of physical findings and other accessory data, are of considerable diagnostic and prognostic value. The signs of poor prognosis in cirrhotic patients are the presence of ascites, prolongation of the prothrombin time, and anemia. The additional findings of hypoalbuminemia and a small liver are also of serious import. Abnormal liver-function tests and the presence of jaundice are less significant. In the absence of . . . serious findings . . . patients with cirrhosis are usually able to tolerate spinal anesthesia or cyclopropane with adequate oxygenation. The routine use of unselected opiates before and after operation adds to the risk of surgery, and the incorrect choice of antibiotics may deprive such patients of the maximal opportunity for satisfactory recovery. The properly selected patient with cirrhosis does not constitute an unfavorable surgical risk, provided the diagnosis is made in advance and proper precautions are taken before, during, and after operation.—David Cayer, M.D., and M. F. Sohmer, M.D., Surgery in Patients with Cirrhosis, *A. M. A. Archives of Surgery*, December, 1955.

RESPONSIBILITIES OF THE PUBLIC HEALTH SERVICE IN CIVIL DEFENSE

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In July, 1954, the U. S. Public Health Service was assigned responsibility for the public health aspects of civil defense by the Secretary of Health, Education, and Welfare to whom this function had been delegated by the federal civil defense administrator, with the approval of the President. This delegation follows the accepted concept that "civil defense must be accomplished, in the main, as an extension of the normal duties of various officials at all levels of government, assisted by volunteers and volunteer organizations." This means a "built-in" rather than a "stand-by" operation. It means using technical competencies that already exist within the service, and it means building on a long-established federal-state relationship to accomplish civil defense purposes.

Major Responsibilities

The Public Health Service was given the following major responsibilities: 1. Plan a national program for the protection and emergency restoration of community facilities essential to health. As part of this task, the Public Health Service has been directed to develop and distribute the technical data required to guide the states and communities in planning measures designed to reduce damage to hospitals, water works, water distribution systems, sewage collection and disposal systems, and other public health facilities and in planning shelters and other protective measures for personnel associated with these facilities. The Public Health Service will also develop technical guidance for states and direct federal activities concerned with emergency restoration of those facilities or functional components thereof following enemy attacks. 2. Plan a national program for the protection of human beings against biological warfare, chemical warfare, and other public health hazards, as well as against communicable diseases of special significance during periods of stress and disorganization. The Public Health Service mission in this task is to develop procedures that the states may use in their programs for the detection, identification, and control of disease-producing and poisonous agents that might occur naturally or be deliberately used against the United States. For these purposes, the Public Health Service will perform research and coordinate research of others and direct federal civil defense activities concerned with provision of technical guidance to states for the solution of these problems. The federal civil defense administrator has asked the Department of Health, Education, and Welfare to include among "other public health hazards" the radiological effects of the special weapons. The details of what responsibilities the Public Health Service shall have for radiological defense are being worked out at the technical levels. It appears certain, however, that the Public Health Service will perform developmental and evaluation studies in all the important areas of radiological defense and that this phase will be a major part of the training activities. 3. Expand the Public Health Service commissioned reserve to provide a reservoir of trained professional personnel who could be swiftly mobilized and deployed in areas damaged by enemy attack. The provision of emergency public health services from support areas is essential to any realistic civil defense program. It is of utmost importance that recruitment of professional personnel engaged in fields allied to the health sciences proceed without delay. The reserve component of the Public Health Service commissioned corps constitutes an effective mechanism for such recruitment, as well as for necessary specialized training of personnel. Further details of this aspect of the Public Health Service civil defense plan will be mentioned later.

Planning, Research, and Training

It will be noted that the Public Health Service does not have the responsibility for casualty care but rather the public health aspects of civil defense. These, in brief, are the primary responsibilities: (1) planning and program development, (2) training, and (3) research. Under the planning and program development part of the responsibilities is recognized an obligation to help the states establish civil defense public health plans and organizations that will enable them to solve the health

- ***Civil defense must be accomplished, in the main, as an extension of the normal duties of various officials at all levels of government, assisted by volunteers and volunteer organizations.***

The normal duties of the Public Health Service have been extended to include, as major responsibilities, (1) the planning of a national program for the protection and emergency restoration of community facilities essential for health; (2) the planning of a national program for protecting human beings against the public health hazards of modern warfare, as well as against communicable diseases of special significance during periods of stress and disorganization; and (3) the expansion of the Public Health Service commissioned reserve to provide a reservoir of trained professional personnel who could be swiftly mobilized and deployed in areas damaged by enemy attack. Its responsibilities do not include casualty care. They do include planning and program development, training, and research.

Regardless of the delegation of specific authority, a high degree of coordination is imperative. In this cooperative national effort, the entire medical profession occupies a position of vital importance.

From Health Emergency Planning, Office of the Surgeon General, U. S. Public Health Service.

Read before the Third Annual National Medical Civil Defense Conference, Atlantic City, N. J., June 4, 1955.

problems that are sure to result from attack by nuclear, biological, chemical, and radiological weapons. Hand-in-hand with organizational needs is the need for large numbers of trained specialists to staff the programs. Protection of 165 million people from the effects of biological, chemical, nuclear, and radiological attacks and preparation for providing emergency public health services to the 70 million inhabitants of critical target areas who may be driven from their homes by threats of attack require a great many more trained people than are available at present in this country. The task of training the numbers needed for public health civil defense is greater than the capacity of any state or, for that matter, of any single federal agency. The Public Health Service feels, therefore, that its training role is one of helping states to develop or improve training programs and of conducting courses for state trainers and key operating personnel.

The research program is closely allied to the program development and training activities. The need for research in communicable disease control will continue as long as the control measures for any major disease remain a mystery. Such research is also in the direct interest of survival during disasters. The needs of civil defense demand that communicable disease research look at the exotic diseases, as well as the common diseases, that may well be revived under emergency conditions. In general, the same principles apply to the control of diseases whether or not the causative agent is introduced by enemy action. Most of the biological warfare cases will be primary cases resulting directly from contact with biological agents. It is imperative during an attack to know quickly when, where, and what biological agent was used, if any effective countermeasures are to be initiated. Among the most pressing needs in the biological warfare defense field, therefore, are more rapid and effective means of detecting, recovering, and identifying pathogenic organisms in air, water, and foodstuffs —possibly also from soil.

In order to define the problems of maximum importance and to avoid unnecessary duplication of research effort, the assistance of the Army Chemical Corps, other units of the Department of Defense, and the Atomic Energy Commission, as well as the Federal Civil Defense Administration, is being utilized in the Public Health Service program. Continuing close liaison with these agencies is being maintained. As I have mentioned, the Public Health Service civil defense research program is directed to the surveillance of the environment for the unnatural presence of pathogenic, toxic, or poisonous substances and to the development of effective protection against these agents. It is believed that the use of such materials, particularly by saboteurs, is a distinct possibility that should be appreciated and, where feasible, guarded against. The extreme vulnerability of water-distribution systems to attack by saboteurs is generally realized. Every house connection and every fire hydrant is a possible point of entry of a contaminant. Policing of a large municipal water-distribution system to prevent such contamination is out of the question. No way of protecting municipal water systems against a determined saboteur is seen; however, it is not believed that entire cities would be attractive targets for such action; it seems more probable that such sabotage would be directed against critical industrial, military, or other particularly necessary elements of a city and that retreatment, auxiliary supply, or storage near the point of use are the only sure means of protecting against such sabotage. The responsibility will be to determine how much treatment will be needed, whether disinfection alone will suffice, or whether more complete treatment must be provided.

In order that control measures may be applied sufficiently early to prevent mass casualties, as I have indicated, it is essential that medical and other public health personnel be alerted as soon as possible after an attack has occurred. An early warning of such an attack requires the availability of detection procedures. A portion of the research program is therefore being directed toward the development and improvement of methods, devices, and techniques for the detection of materials whose presence in the environment represents a completely abnormal situation. It is to be stressed at this point that the detection of abnormal substances is not synonymous with the identification of such materials. Attention must therefore be devoted to improving the methods and techniques for rapid identification of such materials. In order that prophylaxis and therapy may be effective, it is necessary that the agent used by the enemy be identified before the incubation period of the disease has elapsed. Present procedures for such identification are generally laborious and time-consuming. This is particularly true for viruses and rickettsial diseases, which, in some cases, may require weeks for identification. Obviously, further research in this field is needed. The Public Health Service has accepted the need for research also on disinfecting agents and neutralizing compounds and on decontamination methods and techniques as part of its responsibilities. Information on these matters is essential to effective defenses against the effects of the special weapons.

Other Responsibilities

Another area of research responsibility is derived from the anticipated behavior and needs of an evacuated population under severe stress. It is quite clear that a realistic civil defense program must foresee the need to offer protection to panicked and disorganized populations. The Public Health Service has also accepted the responsibility of the need for study of the effects of atomic blasts on works and structures essential to health, such as water supplies and hospitals. The mass of information available from the continuing atomic weapons test programs must be translated into practical design criteria in order to be of use to architects, engineers, and others concerned with design of such works and structures.

It is foreseen that, during and in the aftermath of an enemy attack on our country, the need for professional health personnel would be overwhelming and would far exceed those professional personnel now employed by the official health agencies. It is not intended, nor is it

possible, to depend on the present supply of health workers. In many essential categories of health work, there are not enough trained personnel to do the peacetime job, let alone the difficult tasks that may be expected to arise with suddenness and impact in an emergency. The Public Health Service must look to the American Medical Association and the professions allied to the medical sciences for the required support. Certain members of the numerous professional organizations may be in a position to render valuable service to the nation by participating in this Public Health Service program. The commissioned reserve component of the Public Health Service will serve as an emergency pool of health workers. The Public Health Service commissioned corps categories include medical, dental, nurse, sanitary engineer, sanitarian, and scientist officers. The grades of commissioned officers on active duty are based on academic training and professional experience and are comparable with those of the Army, Navy, and Air Force in rank and compensation. The commissioned reserve is an emergency reserve, and an officer would be called to active duty without his consent only in event of a national emergency publicly recognized as requiring such action—when the survival of large segments of the nation's population is at stake. The Public Health Service is organizing reserve officers as teams composed of medical, nursing, sanitary engineering, and other scientific personnel. Training will be directed to the individual as well as to the team as a unit. Reserve officers may volunteer for active duty for short periods for purposes of intensive orientation and training at one of the Public Health Service training stations. Also, reserve officers will have opportunities to participate in active duty, on a voluntary basis, in regular Public Health Service program activities of interest to them, both in the United States and abroad, for periods of time from a few weeks to a year or more. Formal training is being given, and correspondence courses will be developed for the commissioned reserve.

Comment

The organizational relationships of the Public Health Service at the federal level are comparable to those of state health departments and state medical societies at the state level. The state medical branch of the state civil defense administration is usually under the direction of the state health officer. The assignment of responsibilities at both federal and state levels for planning and operation of civil defenses against the effects of the special weapons has been made on the basis that these are public health problems. There is a traditional relationship between the Public Health Service and the state health departments in the solution of public health problems. Where civil defense responsibility has been assigned to the state health officer, the Public Health Service regional organization will work directly with them in developing improved public health civil defense programs. The state health officers will keep the state civil defense directors informed of significant public health developments for use in their over-all planning and coordination. Similarly, the regional medical directors will keep the Federal Civil Defense Administration regional medical officers, the regional directors of the Department of Health, Education, and Welfare, and the headquarters of the Public Health Service informed of significant developments.

In a few states, responsibility for one or more of the public health aspects of civil defense has been assigned directly to persons or organizations other than the state health officer or state health department. In these states the Public Health Service will work directly with whatever offices have responsibility related to the functions assigned at the federal level to the Public Health Service. Even in those cases, however, it is believed that state health departments can and should make their competencies and facilities available so that in cooperation with these other agencies the best possible type of coordinated civil defense organization will be developed. In fact, regardless of the delegation of specific authority—in the health department, the medical society, or elsewhere—a high degree of coordination is imperative. Private physicians, dentists, engineers, and other professions, and their professional organizations, as well as the police, the schools, welfare departments, and water works operators, are deeply involved in civil defense. The ability of health department representatives to fulfill their public health responsibilities depends, in large part, upon how well these others do their jobs, and their successful operation is similarly dependent upon the Public Health Service. In this cooperative national effort, the entire medical profession occupies a position of vital importance.

Renal Tubular Insufficiency.—Only recently has selective tubular hypofunction been recognized to be the basis for human metabolic disease. Fanconi first suggested that malfunction of the renal tubules might cause rickets and separated rickets due to primary tubular disease from both classical rickets based on vitamin deficiency and typical renal rickets associated with failure of phosphorus excretion. He reasoned that the syndrome featured by hypophosphatemic vitamin D resistant rickets, aminoaciduria, glucosuria, and organic aciduria reflects failure of the renal tubules to reabsorb phosphorus, glucose, and amino acids from the ultrafiltrate of plasma. Fanconi's syndrome, therefore, was the first disease attributed clearly to failure of renal tubular mechanisms.

Lightwood and Butler and associates described another syndrome which they related directly to renal tubular inadequacy. This disturbance, metabolically characterized by the existence of hyperchloremic acidosis, develops because the renal tubules cannot conserve fixed base. The Fanconi and Butler-Lightwood syndromes along with several other closely related diseases have been extensively studied in recent years and much has been learned of their etiology and pathogenesis. Investigations carried out to date support the hypothesis that selective renal tubular insufficiency may be the basis for human disease and justify grouping several apparently unrelated syndromes together as disorders reflecting an underlying renal tubular inadequacy. Further impetus to the study of renal tubular disorders was provided by Dent who first used paper chomatography to reveal abnormalities in urinary excretion of amino acids. Discovery of the occurrence of animoaciduria in a number of conditions followed. Recently Dent, Jackson and Linder, as well as Fanconi have amplified the concept of renal tubular insufficiency and have attempted to classify tubular disturbances on the basis of the metabolite which is mishandled.—Howard G. Worthen, M.D., and Robert A. Good, M.D., Concept of Renal Tubular Insufficiency with Description of 3 Typical Cases, *Journal Lancet*, November, 1955.

HOW PUBLIC HEALTH SERVICE IS CARRYING OUT CIVIL DEFENSE RESPONSIBILITIES

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• *The new concepts of mass evacuation from critical target areas and of radioactive fall-out make it imperative that state plans be revised and broadened. The Public Health Service program stresses the provision of consultative services.*

Three types of special civil defense training courses are contemplated. One will consist of field-training courses primarily for chief operating personnel at state levels and key local sites and will include public health physicians. A second will train civil defense state and local basic public health operating personnel for the tasks that will arise at operating levels. The third will prepare key operating professional specialists from states and localities to meet the specialized public health problems created by the threat of radiological, biological, or chemical warfare.

Research projects are also being developed concerning the epidemiologiy related to such warfare and the disruption of normal sanitary practices by large-scale destruction and mass evacuation.

Eight regional offices serve as the channel through which the Public Health Service works cooperatively with state health departments toward the solution of public health problems. In each of these offices the medical officer in charge, the general medical consultant, the sanitary engineer, the nurse officer, and other members of the professional staff have been given special training in civil defense. They will assist the states in developing and improving plans, organizations, and programs covering public health aspects of civil defense. They will be supported in this by the triple-strength program of the Public Health Service, described by Dr. Hozier (this issue, page 1206) as the three public health civil defense responsibilities: planning and program development, training, and research.

Planning and Development

The development of adequate public health civil defense plans and the establishment and maintenance of organizations and programs to carry out such plans effectively are primary needs at all levels of government. During the period the Public Health Service has had authority and funds for the public health aspects of civil defense, it has devoted its principal efforts to building up in-service competencies, reviewing what is being done and what is needed in civil defense, and preparing plans for federal activities, which include provision of technical assistance to the states. The American Medical Association's 1954 survey of state civil defense programs was helpful in determining needs and in evaluating the resources being utilized. The Public Health Service has also reviewed the written state public health civil defense plans. With few exceptions, these plans deal chiefly with provision of casualty care. Without minimizing the importance of being prepared to care for large numbers of potential casualties, the new concepts of mass evacuation of critical target areas and of radioactive fall-out make it imperative that state plans be revised and broadened.

On the basis of what has been learned concerning state plans and needs, the Public Health Service program stresses the provision of consultative services. As requested by the states, specialists will work in the areas where they are most needed in order to apply the new concepts and newly developed techniques and procedures. These consultants and the regional staffs will arrange Public Health Service courses for the training of state instructors and key operating personnel and in other ways help states to initiate and improve their public health civil defense training programs. The states, in turn, as part of their training programs, will assist their political subdivisions in setting up similar programs for training local health workers. So far as its resources will permit, the Public Health Service will provide the states, upon request, with advice and technical assistance in setting up the local programs and conducting the local courses.

Types of Training Courses

In general, three different types of special civil defense training courses are contemplated. The content of these courses will be tailored insofar as possible to meet the particular needs of the state. Not only can relatively large numbers of civil defense public health workers be trained in this program, but they can be trained in such a way that a reasonably uniform mode of operation will result. This will facilitate exchange of personnel among communities under emergency conditions.

Type one course will consist of field-training courses for professional and technical civil defense public health personnel. It is primarily for chief operating personnel at state levels and key local sites and will be composed of public health physicians, public health nurses, sanitary engineers, sanitarians, and public health laboratory workers. The purpose is to train these people to do the tasks that will arise at supervisory levels as a result of the threat or use of chemical, biological, and radiological weapons. Special emphasis will be placed on public health problems arising from the mass evacuation of populations. The course will prepare the appropriate state and local public health authorities to serve as instructors in conveying this training to local areas within their own states.

Type two course will provide field training for operating professional and technical public health personnel. The purpose of this course is to train civil defense state and local basic public health operating personnel to perform the tasks that will arise at operating levels. Previously trained key personnel from state and local health departments and related agencies will conduct the course.

From the Bureau of State Services, U. S. Public Health Service.

Read before the Third Annual National Medical Civil Defense Conference, Atlantic City, N. J., June 4, 1955.

If requested, minimal assistance will be given from two centers, the Communicable Disease Center at Atlanta, Ga., and the Robert A. Taft Sanitary Engineering Center at Cincinnati.

Type three course, to provide advanced training for key operating professional specialists from states and localities, will be given at Public Health Service centers and, where local technical facilities permit, in the states. This type of course will provide a reservoir of highly trained public health personnel at state and local levels who have advance scientific knowledge and proficiency for both training and application in meeting the specialized public health problems created by the threat or use of radiological, biological, or chemical weapons.

For many years the Public Health Service has conducted courses in public health subjects for state public health workers at the Communicable Disease Center and the Sanitary Engineering Center. These regular public health training courses have now been augmented with civil defense material to provide rounded public health and civil defense training for all state participants. Special civil defense courses on a pilot basis began in July, 1955. Within the limits of the resources and funds during this next year, it is hoped to help all of the states who wish assistance in training.

Research Projects

In addition to its training activities, the Public Health Service is developing many research projects that have both civil defense and normal peacetime values. For example, even under normal circumstances the problem of human infections by air-borne organisms is one of growing significance. Epidemiological evidence indicates that some of the more important communicable diseases are air-borne in nature, such as histoplasmosis, coccidioidomycosis, and possibly other fungal infections; psittacosis; Q fever; pulmonary tuberculosis and many other respiratory infections; and possibly pneumonic plague. The Public Health Service, for several years, has been conducting studies on the detection and identification of air-borne pathogens from the standpoint of peacetime application. Under projects that have been recently established to meet civil defense needs, these investigations have been intensified and extended.

There is also pressing need for the improvement of field techniques and reporting mechanisms that will provide continuing, accurate, and current epidemiological indexes of communicable diseases. Unusual occurrences of disease, either indigenous or exotic, must be detected and reported with a minimum of delay. In addition, there is need for methods of rapidly identifying those organisms that are considered to be potential biological warfare agents. Serologic methods have shown the greatest promise to date. A project has been established to develop methods of rapidly identifying pathogenic organisms when only relatively small numbers are present. Promising results have been obtained in preliminary studies with fluorescein-tagged antibodies.

A project that seeks to adapt infrared spectrophotometry in the rapid identification of bacteriological agents is also under way. When dried smears of bacterial cells are subjected to infrared spectrophotometry, characteristic and identifying spectrums are obtained. The spectrographic data may be transferred to punch cards and identification automatically established by matching unknowns with knowns. This procedure can be accomplished within a few hours, after sufficient bacterial cells are available. It is believed that this procedure is capable of detecting and identifying pathogens present in relatively small numbers, even when mixed with relatively large numbers of nonpathogenic organisms. The entire procedure, from collection of the sample to detection, isolation, and identification, should consume less than 30 hours. This is a much shorter time than the incubation period of most potential biological warfare agents.

The Public Health Service is also seeking to develop improved methods of safeguarding water, milk, and food supplies. A number of biological agents would make excellent water contaminants. Radioactive materials per se are not considered to be probable intentional contaminants, but there are hazards to water supply from radioactive fall-out. Under some circumstances, impounded reservoirs and other water sources may be heavily contaminated. Some of them may remain dangerously contaminated long after the fall-out on the ground has decayed to acceptable levels. Extensive experimental work done by the Public Health Service and others has shown that standard water-treatment processes are of limited use in removing soluble radioactive materials from water. If water supplies are dangerously contaminated with these materials, and if the radioactivity is not so closely associated with particulate matter as to be removed with the particles, expensive treatment such as ion-exchange or distillation will be required to produce safe drinking water. While alternate supplies are most desirable, attention needs to be given also to more economical treatment methods.

Mass Evacuation Problems

The new concept of mass evacuation of critical target areas has brought with it a host of public health problems. In this country many of the communicable diseases are controlled or held in check by the combined effects of a relatively high standard of living and widely employed public health practices of immunization, water treatment, milk pasteurization, environmental sanitation, and improved nutrition. The destruction of homes, of water supply installations, and of sanitary facilities; the movement or concentration of large population groups and the lowering of individual resistance by exposure, by inadequate or improper diet, and by lack of immunization may all be associated with modern war and could reduce defenses against disease to a primitive state. This could well be followed by an increase in communicable disease to epidemic proportions. Medical resources would already be strained to the limit to meet needs for care of casualties. The additional burden of disease epidemics might well prove to be the decisive factor in breaking down emergency medical treatment facilities and consequently civilian morale. The Public Health Service believes, therefore, that, in addition to maintaining, as far as possible, the present methods of disease control during wartime, it must carry on a continuing search for new and more effective procedures. It

must also continually carry on research to collect, evaluate, and provide the states with all information currently available to assist them in solving these problems. The Public Health Service epidemic intelligence system, the epidemiologists who are being trained for state and local investigation of disease outbreaks, and the reports of practicing physicians will play an important part in keeping the Public Health Service informed of unusual occurrences of diseases.

Dr. Whitney has given an excellent status report of the chemical defense program and has also discussed the status of the working relation between the Federal Civil Defense Administration and the Public Health Service in this area (this issue, page 1195). However, the service has been fortunate to have the Army Chemical Corps assign a senior officer to the Public Health Service to develop the chemical defense program for the service. Public Health Service work on protection of hospitals, water works, and the like is aimed at determining vulnerability of personnel and probable damage to vital component parts of these facilities. It is also developing means of strengthening protective features and is concerned both with the physical protection of such facilities and with emergency restoration of their functions after an attack.

Conclusions

All physicians, as well as the general public, need to be fully informed of the potentialities of biological, chemical, and radiological warfare. The present methods of reporting sickness should be improved to provide prompt information concerning every possible disease outbreak. Epidemiological investigations should be made of each potential epidemic. Every community needs to maintain high levels of immunization for the common infectious diseases. In maintaining and strengthening the regular public health programs, each one makes a personal contribution to the cooperative endeavors for effective public health civil defense. Until these programs are staffed with specially trained personnel and equipped to apply the findings of research, they cannot fully meet the potential threat of modern warfare.

MOBILE MEDICAL SUPPORT FOR CIVIL DEFENSE

2. TREATMENT OF MASS CASUALTIES

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• ***Under disaster conditions, the treatment of the individual patient cannot approach the ideal. Compromises in treatment become essential, but they follow some general principles: 1. Infections under these conditions have to be treated, rather than prevented. 2. When the supply of blood is limited, it can be used most efficiently in patients in whom the hemorrhage has been controlled; a limited quantity of blood will, therefore, save more patients with injuries in the extremities than with intra-abdominal hemorrhage. 3. In the treatment of thermal injuries, priority should be given to those casualties with burns of 20 to 40%. 4. Patients with wounds of the brain can be transported to fixed hospitals without greatly increasing the mortality. 5. Patients with thoracic and abdominal wounds deserve a fairly high priority.***

These principles were followed in "Operation Mercy." The sorting station was divided into four areas, the admission and triage section, the resuscitation section, the holding section, and the evacuation point. A mobile emergency hospital was given a thorough trial.

The problems imposed on civil defense in the present era require careful evaluation of the concepts of disaster medicine for adequate solution. The assumption that facilities will be available for anything approaching ideal treatment of each individual is untenable. Neither professional resources nor medical supplies can be mobilized for the immediate, complete treatment of as many as 100,000 casualties in a single city. Under disaster conditions, the mass of casualties, instead of the individual, must be the basis of planning. Compromises in treatment are not elective, they are essential. "The greatest good for the greatest number" must be the central thought. Since compromises in treatment are inevitable, they should be planned, should be based on the best scientific data available, and, having been thought out, should be taught to the profession and to the undergraduate students of medicine. The teaching of compromises is a sharp departure in medical philosophy but is essential if confused thinking in times of crisis is to be avoided.

For purposes of organization, as well as for purposes of teaching, the Harris County Medical Society concluded that the only practical means of approaching the problem was the organization of multiple mobile surgical teams, each self-sufficient. Such teams could be mobilized and immediately dispatched to the scene of a disaster. "Operation Mercy" was the first such effort. Such a unit, comparable to the Army's field hospital or mobile surgical hospital, was mobilized after previous planning but without warning for a field trial. It was dispatched to Beaumont, Texas, 90 miles distant, was set up, and operated for six hours to handle 250 simulated casualties. Each "casualty" was tagged with a specific diagnosis, resuscitated, processed through a triage station, had necessary emergency surgery, and evacuated to hospitals in Houston (see this issue, page 1202). The

From the Harris County Medical Society.

plan of operation (see table), based on the military pattern, established a sorting or triage station in a warehouse, within a few hundred yards of the simulated disaster. A nearby school building was selected as the site for the emergency hospital. Four physicians and 21 corpsman manned the sorting station, the casualties having been tagged and brought on litters to the sorting station by the Beaumont Civil Defense corpsmen. The emergency hospital was staffed with three resuscitation teams, a burn unit, a postoperative and holding ward (three physicians and three corpsmen in each unit), and four operating teams (two surgeons and two corpsmen in each) with a physician each in the radiology unit and blood bank and commanding the hospital. Nursing support was provided in each operating room; in the resuscitation, burns, and holding wards; and in the preparation of sterile supplies. Lay personnel supervised registration and evacuation.

Table of Organization

Sorting Station
- 4 surgeons
- 20 medical corpsmen
- 1 registrar, 4 aides
- 1 evacuation officer, 4 aides

Mobile Surgical Hospital

4 surgical teams, each composed of:
- 1 surgeon
- 1 assistant surgeon
- 1 nurse
- 1 anesthetist

1 postoperative and holding unit
- 1 physician
- 1 nurse
- 4 corpsmen

1 blood bank unit
- 1 physician
- 3 technicians

1 sterile supplies unit
- 1 supervisor nurse
- 1 assistant supervisor nurse
- 4 student nurses

4 resuscitation and burn teams, each composed of:
- 2 physicians
- 1 nurse
- 4 corpsmen

1 radiological team
- 1 radiological monitor
- 1 diagnostic radiologist
- 2 technicians

1 pharmacy unit
- 1 pharmacist
- 1 assistant pharmacist

1 administrative unit
- 1 commanding officer
- 1 assistant commanding officer
- 1 chief nurse
- 1 operating room supervisor
- 1 assistant operating room supervisor
- 4 corpsmen

The diagnosis of each casualty was established by prior planning and tagging. As the casualties were processed, decisions were made and recorded in detail on simple field-type record sheets. All therapeutic measures and the time of each treatment were recorded. Evacuation details were recorded. Patients were selected for emergency operation, holding, or evacuation, and the basis for the disposition was noted. The practical aspects of the operation included the fact that 250 casualties were to be processed by this unit within six hours, utilizing only the equipment, blood, plasma expanders, and drugs found available and brought to the scene of the disaster. Following the completion of the operation, the field records were collected and critically analyzed for efficiency of triage, treatment, evacuation, and expenditures of professional and medicinal resources. It was determined that 73% received good care, 19% received fair care, and 8% received poor care.

Principles of Management of Mass Casualties

On the basis of extensive military experience and the limited civil defense experience of the type described above, it appears that certain principles of management of mass casualties should be stressed. The plan of treatment must be designed to accomplish the greatest good for the greatest number of people.

Trauma.—Within the first 24 hours, most fatalities occurring in patients surviving to reach medical installations are due to hemorrhage or mechanical defects. Traumatic wounds are contaminated wounds containing pathogenic aerobic and anaerobic organisms. The prevention of infection is primarily dependent upon the adequacy of débridement. Antibiotics will not prevent infection in the presence of necrotic tissue. Gas gangrene develops primarily in patients with arterial injuries. It has an incubation period of 24 to 48 hours. It cannot, in the presence of gangrenous tissue, be prevented by antibiotics. Its prevention requires surgical removal of the mass of nonviable tissue. Traumatic injuries are contaminated injuries and in the presence of nonviable tissue will become infected. In the absence of arterial injury, antibiotics will probably prevent early fatalities from these wounds. Infections will, under these conditions, have to be treated rather than prevented.

Shock.—Nature has supplied man with a relatively greater reserve in red blood cell mass than in plasma volume. A young man who rapidly loses 50% of his whole blood is almost dead. The use of plasma or plasma volume expanders, while not restoring his red blood cell mass, restores his circulating volume and materially assists him to compensate for his injury. Plasma or plasma volume expanders can, as a compromise, be used to replace blood loss in amounts of 1,000 to 2,000 cc. In greater amounts units of whole blood and plasma substitutes may be administered alternately so as to extend the supply of blood. When the supply of available blood is limited, it can be used most efficiently in patients in whom hemorrhage has been controlled. A limited quantity of blood will, therefore, save more patients with injuries of the extremities than with intra-abdominal hemorrhage.

Burns.—Burn wounds are contaminated, and, since immediate débridement is not technically feasible, immediate surgery has little to offer the patient with uncomplicated burns. Since the burn wound is already contaminated, sterile dressings are not essential to the management of these patients. The cause of early death in patients with thermal injuries is blood volume deficiency. This deficiency is primarily in the plasma component. While desirable, whole blood is not absolutely essential in the immediate treatment of thermal injuries. Plasma or plasma volume expanders will suffice. Patients with burns of 5 to 15% of their body surface will survive if given fluids orally. Most patients with deep burns of 60 to 100% of their body surface will die in spite of intensive therapy. In the presence of mass casualties, first priority in the treatment of thermal injuries should be those casualties with burns of 20 to 40%.

Head Wounds.—In the absence of increased intracranial pressure, patients with wounds of the brain tolerate transportation to fixed hospitals without greatly increasing the mortality.

Thoracic Wounds.—Intrathoracic injuries, while seldom requiring formal thoracotomy, apparently result in a marked increase in mortality if treatment of the mechanical pulmonary defects and blood volume deficiency is delayed. As a result, these injuries deserve a fairly high priority.

Abdominal Wounds.—Patients with perforating wounds of the intestine appear to deteriorate rather rapidly with the passage of time. They too deserve a fairly high priority.

Application of Principles in "Operation Mercy"

Most of the surgeons participating in "Operation Mercy" were veterans of World War II or the Korean conflict. The principles of triage were well known to them, yet never had they been faced with as many as 250 casualties in an improvised hospital to be treated within a period of six hours. Furthermore, they had never before worked together as a team. To the medical students, accustomed to thinking of the individual patient, the principles of triage were almost totally unknown. Personnel to man the sorting station traveled together to the scene of the disaster in a large bus. This trip, requiring two to three hours, offered the opportunity to review the principles of priority and sorting. Furthermore, the responsibility of sorting and classification remained in the hands of experienced surgeons at both the sorting station and at the hospital.

Sorting Station.—At the sorting station, 250 major casualties had been waiting for approximately three to four hours. It was thus necessary to rapidly appraise the seriousness of each individual casualty and prescribe treatment accordingly. The sorting station was divided into four sections that were roped off from one another and appropriately designated by previously prepared placards.

Admission and Triage Section: Patients were admitted on litters with diagnoses attached. Emergency medical tags were begun with name of patient, time of admission, vital signs, and diagnosis. All medicaments given were noted on the emergency medical tag, and disposition of the patient was also noted at that time. At the time disposition was determined, a priority of evacuation was established for each individual patient. Evacuation priority was broken down into three headings based upon findings of the admission section medical officer. The first priority classification was for patients requiring emergency surgery as soon as possible. These patients were evacuated to the mobile hospital as rapidly as transportation could be obtained, for their resuscitation (e. g., control of intra-abdominal bleeding) depended primarily upon operation. The second priority was for patients requiring resuscitation prior to surgery. These patients were in profound or impending shock, and it was obvious that transfusion would be required before surgery could be performed. This group of patients was held and resuscitated in the sorting station until the hospital could handle the load in its resuscitation section. The third priority was for the normal chain of evacuation. Many patients seen could await normal evacuation in an orderly fashion. The evacuation priority listing was set up with one primary purpose; namely, that the sorting station would act as a funnel retaining all confusion and turmoil at the sorting station level, so that the operation of the hospital could be at peak efficiency.

Resuscitation Section: Many of the casualties required resuscitation and emergency procedures prior to evacuation. They were immediately moved to the resuscitation section. Tracheotomies, pericardiocenteses, application of splints, and other procedures were carried out in this area. Fluids intravenously, including blood and dextran, were administered in the resuscitation section. As rapidly as patients could be evacuated to the mobile hospital, or a permanent hospital in adjacent cities, they were moved from the resuscitation section to the evacuation point.

Holding Section: The holding section was maintained to act as a bottleneck to prevent overcrowding of the evacuation point and of the mobile hospital. All casualties of a relatively minor nature, which did not require emergency surgery, were placed in the holding section until top priority casualties were evacuated. Also, casualties so severely injured that little hope of salvage remained were placed in this section. This group included patients with burns of over 60% of the body surface and massively crushed casualties in whom chances of survival were slim. It was the policy of the sorting station that those individuals to whom treatment offered the greatest chance of survival should be cared for first.

Evacuation Point: An area in the rear of the sorting station was designated as an evacuation point; from there all casualties were transferred to ambulances for evacuation. The registrar maintained from this position a record of the patients being evacuated as well as their destination. Communication between the area and the mobile hospital was maintained, so that the rate of evacuation to the hospital remained fluid. Records were obtained from 216 casualties who were evacuated through the sorting station. One hundred twenty of this group were evacuated to the mobile hospital, 54 were held at the sorting station for definitive care at that level, and 42 were evacuated by railroad car directly from the sorting station to large permanent hospitals in Houston.

Mobile Hospital.—The organization of an emergency hospital, capable of caring for approximately 150 to 200 casualties within a short period of time, required a surprisingly large amount of ancillary equipment and personnel. Water trucks and electrical generators for adequate utilities were vital to the functions of an emergency hospital. The magnitude of equipment and the high percentage of available professional personnel directed into the hospital work are emphasized because their relative merit in such a disaster program must be critically evaluated.

Approximately five hours after the director of the entire operation was alerted, the first casualty was admitted to the emergency hospital for definitive care, 90 miles away. The chain of evacuation of patients through the hospital was in orderly fashion, and the rate of care was determined by the nature and extent of injury and the

degree of surgical intervention required. Approximately 100 pints of refrigerated universal donor blood were brought to the emergency hospital with the convoy, and 400 pints of dextran were trucked to the hospital from civil defense depots in nearby areas. One thousand units of serum albumin was located and ready for air shipment from Red Cross stockpiles in the Middle West and Southwest. Roentgenographic examinations of patients were carried out when deemed necessary, using a portable x-ray machine that was carried with the emergency hospital. After surgical care in the emergency hospital, patients were evacuated by rail to permanent hospitals in neighboring communities for further care.

Comment

From the standpoint of planning, four physicians are not enough to operate the sorting station, for it is here that many vital decisions must be made and where therapy should begin. In fact, this phase of the work is so important that the decision to activate the mobile hospital unit as a hospital must be justified, for 86% of the professional personnel was allocated to the hospital. Each operating room, at best, can operate on one patient per hour, or a total of 24 patients for four operating rooms in six hours. Thus, not over 10% of the casualties can reach the operating room. However, the hospital was better prepared to continue treatment of thoracic injuries, for the x-ray unit was of real assistance. It was also better prepared to handle the respiratory burns, for the electrical supply permitted more adequate endotracheal aspiration.

In retrospect, the basic planning for care appears sound, so long as the ratio of patients to doctors is not greatly increased. If the casualty load reaches an impossible limit, the hospital component must be temporarily abandoned and all physicians must undertake resuscitation. In order to expedite movement of patients and physicians, the hospital should be adjacent to the sorting station, but this did not appear possible in the specific field problem undertaken. For purposes of organization and training, the hospital pattern is, we believe, sound. If it is possible to use it, it can be of great value. If the extremity of the situation is so great that it would prove to be an unjustified medical luxury, the personnel and supplies could be used to man additional sorting stations.

Certain errors were made in planning. The amount of blood and dextran diverted to the sorting station was inadequate to meet the relative need. The number of tracheotomy tubes for casualties with respiratory burns was inadequate, and patients theoretically died because of this shortage. In practice, other errors became apparent. Too many patients were evacuated through the hospital. For example, patients with head injuries, who were to be returned to Houston for operation, were often sent to the hospital. They should have been evacuated directly from the sorting station. Not infrequently uncomplicated problems and even some of the walking-wounded were needlessly transferred to the hospital. All possible opportunities must be taken to bypass the hospital to prevent overcrowding. The initial supply of blood was limited to that on hand in Houston. Nothing should have been guarded more closely; yet, in retrospect, blood was often squandered in treating burns, where dextran would have temporarily sufficed, or in treating continuing intra-abdominal hemorrhage where the prognosis was poor. It was seldom that a physician thought to alternate the administration of blood with dextran, thereby extending the supply of blood. Occasionally morphine was used unnecessarily, resulting in the immobilization of an additional casualty.

On several occasions, patients who were hopelessly burned were vigorously treated, thereby expending time and supplies that could more profitably have been spent elsewhere. Time was spent initially giving tetanus toxoid boosters or tetanus antitoxin. This is worthwhile, but, since tetanus usually has an incubation period of six to eight days, its immediate prevention should not be undertaken while casualties are still bleeding. The administration of antibiotics must also be timed in relationship to the press of other requirements. The indications for immediate operation were centered chiefly around the control of hemorrhage. Patients with wound hemorrhage, traumatic amputations, intra-abdominal hemorrhage, or abdominal injury with evisceration were selected for operation first. Later, patients with uncomplicated intestine perforation were selected for laparotomy. Patients with hemothorax or pneumothorax were treated by thoracentesis or closed drainage of the pleural cavity. The latter tended to make the patient nontransportable.

Although many criticisms of details of therapy could be made, the over-all level of patient care was excellent. Compromises were made on an intelligent basis, with a courage that stemmed from sound knowledge. The most serious deficits were in evacuation policies rather than in resuscitation. Surgically, the concept of a mobile unit in support of a disaster area appears sound.

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Treatment of Keloids.—Fresh keloids consist of dense bundles of collagenous fibrils and an ample mucinous ground substance with a high content of mucopolysaccharides. Mast cells and fibroblasts are present in large numbers. Keloids of longer standing are less cellular, with fibril bundles predominating, whereas the ground substance is less ample. Since cortisone and hydrocortisone are known to influence the chemistry and morphology of connective tissue cells and to inhibit their production of intercellular substance, it is reasonable to expect that keloids would be susceptible to treatment with adrenocortical steroids. In patients with Cushing's syndrome wounds and scars are apt to become distended. This is also observed in patients on systemic treatment with corticotropin (ACTH) and cortisone. In such patients softening of keloids has been noted as well. This effect is, however, too slight and undependable to acquire any therapeutic importance. A more marked effect must be expected from topical injection of hydrocortisone acetate. . . . In most cases the treatment results in clinical and microscopic improvement and usually in satisfactory cosmetic results. It is important, however, to inject the substance into the diseased firm tissue, as in normal tissue it may induce transitory, disfiguring soft-tissue atrophies. New formation of connective tissue is demonstrable microscopically 7 to 12 days after the first injection. This is no doubt the optimum time for the next injection.—G. Asboe-Hansen, M.D., H. Brodthagen, M.D., and Lis Zachariae, M.D., Treatment of Keloids with Topical Injections of Hydrocortisone Acetate, *A. M. A. Archives of Dermatology*, February, 1956.

RADIOLOGICAL DEFENSE PLANS IN CALIFORNIA

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• Thermonuclear weapons are fully capable of destroying large cities. Dispersion is the only real protection against these weapons. By proper planning for evacuation and protective shelters, a few hours of warning may suffice to reduce the number of casualties by half.

The early phase is marked by confusion and delay, since most of the radiological defense personnel will be volunteers. During this phase the normally active protective services—law enforcement, fire, utilities, and engineering services—must be active in radiation-detection and communication; meanwhile the complete over-all state civil defense plans go into effect, with the integration of all the various groups.

The radiological training program has assisted in training medical personnel in monitoring functions, training radiological laboratory technicians, and training instructors for volunteer and service-monitoring groups. More than 450 instructors and 6,000 monitors have been trained. Sixteen mobile laboratories have been designed and purchased, and 105 trailers, each for the use of a monitoring squad of 20 persons, have been equipped with radiological apparatus. Maintenance has been satisfactory.

Civil defense preparations in California began in earnest after the initial attack on Korea in June, 1950. Shortly after the state civil defense plan was completed, a radiological defense plan was prepared as an annex to the over-all plan. The outline for the radiological defense plan was [1] (1) purpose; (2) basic policies and planning principles; (3) assumptions on enemy actions and results; (4) essential problems, consisting of (*a*) understanding of both the immediate and long-range implications of atomic warfare in all of its aspects, (*b*) developing an adequate organization, and (*c*) evaluation of the amount of radiation exposure and decontamination problems during acute phases of the disaster; (5) missions—as preemergency in (*a*) training, (*b*) public information, (*c*) radiological intelligence, (*d*) meteorology, (*e*) instrumentation, (*f*) health physics, and (*g*) special laboratories—alert phase, postattack in acute phase, and postattack in chronic phase; and (6) staff organization and responsibilities.

Although this paper concerns the plans for radiological defense in California, it must be emphasized that radiological defense is just one of the many important problems confronting civil defense authorities and the civilian population of this country. With the constant threat of thermonuclear warfare, it is imperative that the entire problem of adequate civil defense be considered in its proper perspective. Adequate communications, medical supplies, the training of volunteer personnel, first-aid measures, and preattack planning are but a few of the many things to be considered, and one is just as important as the other in the over-all plan. With increasing knowledge of the fall-out and of radiological contamination, radiological defense requires adequate and realistic planning.

State Civil Defense Plan

California has a good civil defense act that is administered through the governor, who has the responsibility of administration and direction of all civil defense forces and resources within the state. He is advised by the state disaster council and other such advisory bodies that he may appoint. The state office of civil defense is headed by a director who acts on behalf of the governor. The state was divided into 10 mutual-aid regions, with a regional coordinator for each region. The regional coordinators are responsible for the coordination of the state effort and resources within their respective regions and for the correlation of the individual political subdivisions therein. It is probable that in the future the 10 regions may be reorganized into only 3 regions. The state civil defense plan is further administered by the duly-designated authorities of county, city and county, or city, who are responsible for the coordination and correlation of resources and facilities within their respective boundaries. The basic concepts of civil defense are self-help and mutual aid. One important aspect of civil defense planning in California is that the plans are constantly being changed in the light of new developments in warfare and also as often as necessary to increase the efficiency and effectiveness of civil defense.

Training

The major objectives of the radiological training program have been (1) assisting in the training of medical personnel in monitoring functions, (2) training of radiological laboratory technicians, and (3) training of instructors for volunteer and service-monitoring groups. Approximately 6,000 monitors have been trained in California. Many of these individuals are policemen, firemen, high school science teachers, and laboratory and radiology technicians. It takes approximately 16 hours of instruction to train a monitor. More than 450 instructors have been trained. The instructors train the volunteer monitors. All of the training is done on a volunteer basis, with the state paying for the travel and subsistence only of the instructors. The organizations for which they work continue their pay during the two-week training period. A minimum of 40 hours of instruction is required to train an instructor.

From the University of California at Los Angeles, School of Medicine.

Read before the third Annual National Civil Defense Conference, Atlantic City, N. J., June 4, 1955.

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Instrumentation Program

Some of the accomplishments include (1) development and procurement of mobile laboratories for emergency examination of water, air, foods, soils, and the tissues of plants and animals; (2) radiological assay instruments in the state radiological laboratory; (3) radiation-detection instruments for monitors in all categories; (4) provision of background monitoring by means of the above for detecting changes in background radiation from any source. Approximately $1,100,000 has been spent on radiological defense in California since January, 1951, $385,000 of which has been spent on radiation-detection instruments. The following instruments have been purchased and received [2]: (1) geiger-type instruments (835 at $60 each), (2) ion-chamber-type instruments (935 at $90 each), (3) ion chamber instruments (2,000 at $98 each), and (4) ion-chamber-type instruments (500 at $120 each). With the exception of the instruments listed under 4, 90% of the detection instruments have been distributed. Only 10% of these instruments have been kept at civil defense headquarters for replacement for immediate availability.

The geiger-type instrument has an effective range from background to 20 mr. per hour. It requires two 1.5-volt flashlight cells, two 45-volt batteries, and one 22.5-volt battery. This instrument is particularly useful for surveys of low-level beta-gamma contamination and for personnel monitoring under such circumstances. The instruments are subject to saturation in fields above 20 mr. per hour and are entirely unreliable if radioactivity above 20 mr. per hour is present. The ion chamber instrument under 2 above requires relatively high levels of radiation to activate it. It responds only to gamma radiation. It requires six 1.34-volt mercury penlite-type cells, and it has a logarithmic-type scale with ranges from 0.02 to 500 r per hour. The ion chamber instrument under 3 above is a useful instrument, and it responds only to gamma radiation. It has a logarithmic-type scale, with ranges from 0.5 to 500 r, and two switch positions, so that readings can be interpreted as milliroentgens or as roentgens per hour. It has seven 1.34-volt mercury penlite-type cells. The instrument in 4 above responds to both beta and gamma radiation. It is planned to use them in hospitals, for hospital personnel, wounded persons, and others. It also has a coil of wire 20 ft. long, so that the meter and the operating personnel can be kept that distance away from the material or personnel to be checked. The advantages of this instument are that its construction permits one to see the probe and the meter at the same time, and its 20-ft. extension provides greater safety to operators. All instruments do not have to be capable of monitoring for both beta and gamma radiation.

The ratio of betas to gammas for the first day after a thermonuclear explosion is approximately 200 to 1. This ratio diminishes steadily with time. In three years after the initial explosion, the proportion of betas will still be four times greater than the gammas.

Monitoring Squads

One hundred five trailers equipped with ion chambers and geiger-type instruments, gas masks, protective clothing, water, two-way radio, and utility tools have been provided. The monitoring squad for each monitoring is composed of 20 persons. The trailers are distributed according to population density, and they are stored in fire and police stations or in city, county, or state facilities. Approximately 90% are stored 20 or more miles from critical target areas.

Mobile Laboratory

Sixteen mobile laboratories have been designed and purchased. The first 6 cost $15,000 each, and the other 10 cost $17,000 each. These mobile units have a 7 by 12 ft. aluminum body 6 ft. 4 in. high, mounted on a 2-ton, dual rear, truck chassis. Each one has an engine-driven 115-volt, 3,500-watt A. C. generator, a water-storage tank, a butane gas tank, communication equipment, radiological assay instruments, and the necessary accessories for the rapid determination of radiation levels in air, water, soils, food, and other materials. Each mobile laboratory has a crew of five: the driver, two assay technicians, and two helpers, one of whom also acts as the radio operator. The unit can also act as a temporary control center, if necessary. The laboratories are dispersed throughout the state, and under a state of extreme emergency they automatically become under the control of the radiological services division of the state civil defense organization. The major functions of these units in a thermonuclear caused disaster would be: (1) determination of decay rates of the fall-out material, (2) determination of levels of radioactivity in water and food required for immediate consumption, (3) determination of the levels of airborne radioactive material, (4) determinations of radiological contamination of human and animal foods prepared or in the process of manufacture or in storage, and (5) continuous check of radiation levels in water, food, air, and soil on a long-range basis.

Distribution of Radiation Detection Instruments

One of the major weaknesses of present civil defense planning is that most local and defense officials and volunteers assume that they will be able to function immediately after the occurrence of a major disaster. This will certainly not be a fact. Without warning it would be unrealistic if one did not, for the purposes of planning, consider that from 60 to 80% of existing facilities and personnel would be destroyed in the critical target areas. The major help and supplies will only be available from the peripheral areas. With that in mind medical supplies, radiation-detection instruments, mobile radiological laboratories, and monitoring trailers have been largely concentrated from 20 to 40 miles from the critical target area wherever possible. Over 50% of all radiation-detection instruments have been distributed among the highway maintenance personnel, fire and police personnel, and full-time employees. This is a much more workable arrangement than having them scattered largely among volunteers who will not be as readily available and who will not have storage sites readily accessible.

Maintenance of Instruments

Every six months the instruments are checked for defects and oftener if they have been damaged. Two maintenance men, one in northern California and one in

southern California, have provided complete maintenance for the 4,170 instruments. Ten per cent of the capital cost is allowed for the maintenance of the instruments. The batteries usually last from four to six months, with moderate intermittent operation. The instruments can be carried in the trunk of automobiles and still function properly in practically all instances. One of the commonest mistakes made by monitors is to leave the instrument turned on, causing the battery to deteriorate and corrode the instrument. The leak-proof batteries are not entirely fool-proof.

Meteorologic Program

The importance of meteorologic information and continued studies in prognosticating the patterns of dissemination of radiological materials cannot be overestimated. This program, in cooperation with the United States Weather Bureau, provides meteorologic data on a current basis in the critical target areas, assembles and distributes information on the characteristic wind patterns by which airborne radioactive materials are scattered, and supplies forecasts to other areas when necessary.

Nevada Bomb Tests

The detonations of atomic weapons both at Nevada and in the ocean are of extremely great value. Their value to the armed forces cannot be underestimated, and the tremendous opportunities afforded civil defense personnel for tracer experiments and for learning about the formation of radioactive materials, their diagnosis, and the problems associated with the fall-out will be of great importance to the nation's future.

Preemergency Radiological Civil Defense Plan

The preemergency radiological civil defense plan is illustrated in the table.[3] Most radiologists will be working with their assigned medical team or in fixed or improvised hospitals in their specialty. Those radiologists who have been trained in radiation therapy or who are especially interested in radiation therapy will be used to form evaluation teams. The evaluation teams are composed of one radiologist, one physicist, one soil scientist, one biologist, and one meteorologist. There will be an evaluation team at the state, region, city, and/or county levels.

Preemergency Radiological Civil Defense Plan for California.—Immediately following an attack there will be considerable confusion for a few hours. Since most of the radiological defense personnel will be volunteers, it will take a short period of time for them to reach their designated stations. During this early phase it will be necessary for the protective services—law enforcement, fire, utilities, and engineering services—to have individuals trained and equipped with radiation-detection instruments. These individuals cannot only use these instruments to find out what the radiation levels are for their own protection but must relay this information to the communication centers. The members of these services, either in patrol cars or such installations as police stations, fire stations, utility depots, and substations, are supplied with communication equipment. Also there are 60 state highway maintenance stations that can act as communication centers and relay the information back to the director of civil defense. In the postattack (acute phase) the complete over-all state civil defense plans go into effect with the integration of all the various groups.

Long-Range Radiological Measures

With the chronic or long-range phases of the disaster, radiological defense measures will assume increasing importance. Systematic surveys of the entire state will have to be made repeatedly. There will be many problems associated with the lingering effects of the fall-out of radioactive materials. The amount of radioactivity in plants, the soil, and foods will have to be accurately known. There has been too much tendency in the past and even today to belittle the effects of radioactive contamination. The facts must be known and not assumed, and the only way this can be done is by having the necessary equipment and trained personnel and the desire to investigate scientifically the problem. The Nevada tests have been most helpful in permitting those in California to make studies associated with the fall-out problem. It has been found that it is not safe to decontaminate food that has been exposed to the open air. Food that is in intact dust-proof bags and in closed cans can be used after the exterior of the container has been decontaminated. Because of the low mineral content of fresh water, it will be possible to use this type of water within a short period after the explosion and especially so if it is not in a heavily contaminated fall-out area. The inhalation or ingestion of radioactive materials may in some cases cause more severe injuries than from the external radiation.

Preemergency Radiological Civil Defense Plan

		Disaster Council				
	Governor					
		Radiological Safety Advisory Committee				
State						
	Director	RADEF Evaluation Board				
		Special labs	Health physics	Instrumentation	Meteorology	Training
Region						
	Coordinator	RADEF Evaluation Board				
				Instrumentation	Meteorology	Training
Operational Area						
	Coordinator	RADEF Evaluation Board				
				Instrumentation		Training
Local						
	City or County (RADEF) Director					
			Health physics	Instrumentation		Training

Drugs

Studies made by the federal civil defense administration [4] have revealed there is little or no radiological health hazard involved in the normal use of exposed drugs from undamaged containers, except that those with a high sodium content should be allowed to cool for several days before being used. Vitamin B_{12} was reduced in potency approximately 50%, and insulin was reduced in potency about 10%.

Radiation Exposure Levels

It has been estimated that dispensaries, receiving units, and other similar medical installations may be used for the first two days if the radiation does not exceed 5 r per day. Operating rooms and hospital emergency rooms should be evacuated after the first two days if the exposure rate is 5 r per day, or 1 r per day after the fifth day. Suggested permissible exposures for monitors and others are [5]: first day, 25 r and 2nd day, 10 r (acute period); 3rd, 4th, and 5th days, 3.3 r per day (intermediate period); and 6th through 56th day, 0.1 r per day (later period)—a total of 50.0 r. After the 56th day, the present accepted tolerance level of 0.3 r per week will be applicable. All hospital personnel and casualties should be carefully monitored, otherwise the entire area will become unusable and serious injuries may result to both hospital personnel and to the casualties.

Decontamination

The care and decontamination of wounds should consist principally of adequate débridement, thorough cleansing by irrigation, and not primarily closing the wound. Specific rules have been provided for the care and disposal of clothing that has been contaminated. Casualties with severe trauma and in shock will have to be handled as individual problems. Casualties with only minor injuries should have their hair, hands, feet, and clothes monitored. The contaminated clothes will be placed in special containers and thorough cleansing of the hair, axillas, skin, fingernails, toenails, and body folds will be necessary. The use of commercial detergents will be helpful in decontamination. It is not possible to make specific rules for all occasions.

The problems of radiological contamination and decontamination have been listed under five categories: (1) corpses; (2) persons requiring medical attention; (3) ambulatory and uninjured evacuees; (4) vehicular traffic leaving the disaster area; and (5) stationary buildings and streets. Every possible precaution must be taken to prevent the contamination of fixed or improvised hospitals, stations, and mass-care centers by the entry of noninjured or injured persons from the disaster area before they have been monitored. Plans have been made to this end, but it is fully realized what a tremendous task this will be under chaotic disaster conditions in the first few hours.

Public Information

Since the Russians have thermonuclear weapons, it is imperative that the United States government give the public all information that is not secret. The failure of the government to take the people into its confidence and fight fear with the necessary facts and information has resulted in an extremely large amount of confusion and apathy on the part of the public. A full knowledge of the over-all picture of thermonuclear warfare will certainly convince even the most skeptical individuals that something can be done in the event of an attack by atomic weapons and that with a short period of warning the number of casualties can be greatly reduced.

Dispersion and Evacuation

Thermonuclear weapons are fully capable of destroying large cities. The only real protection against these weapons is either not to be there at the time of the blast or to have as much protective shelter as possible available. Dispersion is the only real defense against these weapons, if there is enough time to carry out prepared plans.[6] Even if there is no period of warning, evacuation after the bomb blast may be necessary to protect against radiation injuries from the contamination of the radioactive fall-out, to facilitate fire fighting, and for many other reasons. Even with a few hours' alert and proper planning the number of casualties may be reduced by half. It is deplorable that a consistent unified approach has not been made with regard to dispersion and evacuation. Many individuals have considered it impossible and have prevented others from effective planning. It is known that most major cities evacuate the business district each evening under normal traffic conditions. With proper planning the population could be evacuated in much greater numbers. If only 10, 20, or 30% are evacuated it is worthwhile. The greatest asset America has is its people, and everything must be done to protect them.

17-044 Cancer Research Wing, Medical Center (24) (Dr. Stein).

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Treatment of Cirrhosis.—The . . . management of cirrhosis of the liver is best handled as a team project involving the internist, the dietitian, and the nursing staff, with occasional need for active surgical cooperation. In a chronic disease of this sort, with a spontaneously variable course, it is often difficult to assess the precise value of various measures. Enormous patience is required on the part of the entire attending staff, since satisfactory food intake, the most important single item in the plan of management, will often be disappointing for long periods of time, and cooperation by the patient may be very poor. Plans must be made for the treatment to be as chronic as the disease, and a long period of hospitalization may serve not only as a turning point in a previously downward course but also as a period of reeducation into a new pattern of living, during which proper food habits may be well established and the first stages in reducing or eliminating alcoholic intake can be attempted. Rehabilitation of cirrhotic patients, therefore, extends far beyond the actual dietary details and remedial medications employed. For the pathway back to health for these persons is a long, rough, and discouraging one, especially when alcoholism is a major etiological factor, and necessarily involves the acceptance of a diet which is of low palatability for many persons combined with abstinence from alcohol. It is for these reasons that an attitude of patience and sympathetic understanding on the part of the physician and his associates is important.—E. S. Gordon, M.D., The Treatment of Cirrhosis of the Liver, *A. M. A. Archives of Internal Medicine*, March, 1956.

N-ACETYL-P-AMINOPHENOL (TYLENOL ELIXIR) AS A PEDIATRIC ANTIPYRETIC-ANALGESIC

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and
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• Tylenol elixir is a preparation of N-acetyl-p-aminophenol. It was administered alone to 20 febrile patients and, with other medicaments, to 121 infants and children with 20 diagnoses. In the 20 febrile patients it gave an antipyretic effect rated as good to excellent in 18 cases. It was considered to have produced a good analgesic effect in 68 of the 121 patients receiving mixed medication. Side-effects were absent in 134 patients in this study and were considered to be equivocal or inconsequential in the others.

We wish in this paper to report our clinical experience with the use of a liquid form of N-acetyl-*p*-aminophenol in infants and children.

Method of Study

The first part of this study was concerned with clinical conditions in which an analgesic-antipyretic drug would be indicated. The second part involved evaluation of chronic toxic reaction. N-acetyl-*p*-aminophenol was supplied as Tylenol, an elixir containing 120 mg. of N-acetyl-*p*-aminophenol per 5 cc. (one average teaspoonful).

Tylenol was administered to 121 infants and children with fever, pain, irritability, and other symptoms of discomfort associated with the following diagnoses: upper respiratory infection, acute tonsillitis, bronchitis, pharyngitis, tracheobronchitis or laryngotracheitis, herpangina or herpetic stomatitis, sinusitis, pneumonia or pneumonitis, otitis media, cervical adenitis, exanthema subitum (roseola infantum), "grippe," postvaccination reaction or cellulitis, gastroenteritis or viral enteritis, purulent conjunctivitis, headache, miliaria, myalgia, porphyria, and epidemic cerebrospinal (meningococcic) meningitis. Specific antibiotics and chemotherapy were not withheld when indicated. The number of patients in each age group and the dosage schedules used are summarized in table 1.

For the youngest patients (up to 24 months) the most frequently administered dose of Tylenol was one-half teaspoonful (60 mg. of N-acetyl-*p*-aminophenol) every four hours, while one teaspoonful (120 mg.) every four hours was usually the dosage schedule for the patients in the 25-to-36-month age group. Tylenol was administered to patients over 3 years of age in doses of one to two teaspoonfuls (120 to 240 mg.) usually four times a day or every four hours. In this first phase of the clinical evaluation of Tylenol, the drug was administered for periods of one to nine days. As might be expected from the types of disorders treated, the majority of the children (107 of the 121) required treatment for only one to four days. Tylenol was prescribed in conjunction with antibiotics or sulfonamides in 96 of the patients.

Tylenol was also administered to a group of 20 hospitalized infants and children with chronic disease (tuberculosis) over a period of five weeks to determine the safety for prolonged use. Each patient received the drug four times a day for a total of three weeks, with a rest period of one week interspersed between any two weeks of therapy. All patients had blood studies, including a hemoglobin determination, total leukocyte count, and differential leukocyte counts, performed at the start and at the completion of the five-week period. Five patients also had a prothrombin time, bleeding time (Duke), and coagulation time (capillary) determination before the study began and after each week of therapy. All of the patients in this study were carefully observed for signs or symptoms indicating undesirable side-effects. All patients were on some combination of antituberculosis therapy. The age groups and dosage schedules are summarized in table 2.

In this group of 20 patients, the total amount of N-acetyl-*p*-aminophenol administered to the children under 6 years of age was 480 mg. (8 grains) per day or 3,360 mg. per week. The total amount of the drug administered to each patient in this age group during the entire study was approximately 10 gm. Those children over 6 years of age received 960 mg. (16 grains) of N-acetyl-*p*-aminophenol per day or 6,720 mg. each week for a total of approximately 20 gm. during the entire study.

Results

Antipyretic Effectiveness.—It was not possible to credit an antipyretic response to any one medicament in 96 patients who received antibiotics or chemotherapy as well as the analgesic-antipyretic preparation. In this group the antipyretic response was rated as good to excellent in 66, fair in 16, and poor in 4 patients. There was inadequate follow-up in four patients, and six were afebrile. However, in 20 patients receiving no medicament but Tylenol, the antipyretic response was classified as good to excellent in 18 (90%), fair in one patient, and poor in one patient.

Analgesic Effectiveness.—Tylenol was considered to have produced a good analgesic effect in 68 of 121 patients, while the response was graded as moderate in 37 patients and slight in 6 patients. In the remaining 10 cases, an analgesic effect could not be definitely evaluated.

Side-Effects.—No side-effects were observed in 134 of the total of 141 patients in this study. In one patient, vomiting was recorded as a side-effect but may have been

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The elixir containing N-acetyl-*p*-aminophenol used in this study was supplied under the name of Tylenol by McNeil Laboratories, Inc., Philadelphia.

due to a severe cough. One other patient who had fever, vomiting, and abdominal pain prior to institution of therapy had a few episodes of vomiting on the third day of treatment. The vomiting subsided by the fourth day despite continued treatment, indicating that it probably was not caused by the medication. In one patient with pharyngitis and tonsillitis, "questionable abdominal pain" was recorded on the third day of treatment. This symptom was not subsequently reported, although the medication was continued for two additional days. In one patient, a mild diarrhea occurred on the third day of therapy and subsided the next day. One other patient was reported to have diarrhea on the second day of therapy. There was no follow-up on this case. One patient receiving penicillin, a sulfonamide, and Tylenol developed urticaria, which subsided when administration of penicillin and Tylenol was discontinued. In one patient a single episode of epistaxis occurred on the third day of treatment. There was no further epistaxis despite continued treatment for an additional day. In the 20 cases studied for chronic toxic reaction, there were no side-effects and no alterations were noted in hemoglobin levels, cell morphology, leukocyte counts, and prothrombin, bleeding, and coagulation times.

TABLE 1.—*Age Groups and Dosage Schedules for 121 Patients Receiving Tylenol as a Pediatric Analgesic and Antipyretic*

Age Group	No. of Patients	Dosage Schedules, Tsp.*
1 to 12 mo. inclusive	26	½ to 1 q. i. d. to q. 4 h.
13 to 36 mo. inclusive	47	½ to 1 q. i. d. to q. 3 h.†
More than 3 and less than 6 yr.	15	½ to 2 q. i. d. to q. 3 h.
More than 6 yr.	33	1 to 2 q. i. d. or q. 4 h.

* One average teaspoonful (5 cc.) of Tylenol elixir contains 120 mg. of N-acetyl-*p*-aminophenol.
† One patient received 2 tsp. q. 3 h.

Patient Acceptability.—In the entire series of 141 patients, Tylenol was considered "acceptable" or "liked" by 122, or 86%, of the children.

Comment

The literature on N-acetyl-*p*-aminophenol indicates that this compound was investigated by von Mering as long ago as 1889 [1] but discarded for reasons that are not apparent from his published data. Extensive interest did not develop until recently, when the metabolism of acetanilid and acetophenetidin was thoroughly investigated. These recent studies indicate that N-acetyl-*p*-aminophenol is the major metabolite in man of both acetanilid and acetophenetidin.[2] The analgesic and antipyretic effectiveness of N-acetyl-*p*-aminophenol has been established, as well as its low order of toxicity.[3] In rats the acute toxicity expressed as the LD_{50} is approximately 3,200 mg. per kilogram of body weight,[4] while the LD_{50} for acetylsalicylic acid is about 1,750 mg. per kilogram.[5] Chronic toxicity studies in man have indicated that prolonged administration of N-acetyl-*p*-aminophenol had no significant effect on blood cell morphology, urinalysis, or blood chemistries.[6]

N-acetyl-*p*-aminophenol is rapidly absorbed after oral administration, with peak plasma levels occurring in one to two hours. After eight hours only negligible amounts are present in the blood. Eighty-five per cent of ingested N-acetyl-*p*-aminophenol is recovered in the urine in the conjugated form and only 4% appears unchanged.[7] This drug is not changed into aniline or any aniline derivative. Extensive investigations indicate that N-acetyl-*p*-aminophenol does not produce methemoglobin.[8] Greenberg and Lester,[8c] as well as other investigators,[3a] have been able to show that N-acetyl-*p*-aminophenol does not produce anemia. Some confusion has existed in regard to the possibility of bone marrow depression by acetanilid and N-acetyl-*p*-aminophenol. However, clinical studies [9] now indicate that this complication has not been observed. Our studies also indicate that this drug has no undesirable effect on the blood clotting mechanism.

A number of experimental and clinical studies have compared the analgesic effectiveness of N-acetyl-*p*-aminophenol and other drugs of this type.[9] These studies have indicated that N-acetyl-*p*-aminophenol is at least equal in analgesic effectiveness. Batterman and Grossman [3a] consider this drug superior to salicylates in the treatment of musculoskeletal conditions. Most workers have also commented on the lower incidence of side-effects produced by N-acetyl-*p*-aminophenol as compared with other analgesics such as acetylsalicylic acid or the acetylsalicylic acid, acetophenetidin, and caffeine (APC)-type compounds.

Summary and Conclusions

Clinical tests in 121 patients under conditions where Tylenol elixir (120 mg. of N-acetyl-*p*-aminophenol per 5 cc.) would be used as a pediatric analgesic and antipyretic produced effective antipyretic and analgesic responses and no evidence of side-effects that could be attributed to the medication. Prolonged administration of Tylenol to 20 hospitalized children produced no undesirable side-effects and had no effect on the hemoglobin concentration, total leukocyte count, or differential leukocyte count. Special tests in five of these patients indicated that prolonged administration of Tylenol had no effect on the prothrombin, bleeding, or coagulation time.

These clinical studies with Tylenol indicate that this drug may be administered to infants and children according to the following dosage recommendations: infants (less than 12 months of age), one-half teaspoonful (60 mg. of N-acetyl-*p*-aminophenol) every four to six hours; children 1 to 4 years of age, one-half (60 mg.) to one teaspoonful (120 mg.) every four to six hours; 4 to 6 years of age, one (120 mg.) to two teaspoonfuls (240 mg.) every four to six hours; and more than 6 years of age, two teaspoonfuls (240 mg.) every four to six hours. Clinical observations in 141 infants and children treated

TABLE 2.—*Age Groups and Dosage Schedules for Twenty Hospitalized Patients on Prolonged Tylenol Therapy*

Age Group, Yr.	No. of Patients	Dosage Schedule, Tsp.*
Less than 1	1†	1 q. i. d.
1 to 3 inclusive	5	1 q. i. d.
4 to 6 inclusive	6	1 q. i. d.
7 to 10 inclusive	7	2 q. i. d.
More than 10	1	2 q. i. d.

* One average teaspoonful (5 cc.) of Tylenol elixir contains 120 mg. of N-acetyl-*p*-aminophenol.
† This patient received ½ tsp. during the first week of therapy, but the dose was increased to 1 tsp. for the two subsequent treatment periods.

with N-acetyl-*p*-aminophenol in the form of Tylenol elixir indicate that this drug is well accepted and well tolerated by such patients.

19th and Lombard Streets (46) (Dr. Ritter).

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9. Footnote 3. Footnote 8*c* and *d*.

Neohydrin.—Oral Neohydrin was used as the sole mercurial diuretic in 38 patients with chronic congestive heart failure, and in two patients with chronic renal disease, for periods ranging from eight to 84 weeks. In 26 of the 38 cardiac patients (68.4%) the heart failure was well controlled on average maintenance doses of 2.7 tablets daily. Eight to 12 tablets per day were tolerated for short periods in certain patients. The drug was discontinued in nine of the 40 subjects (22.5%) because of side effects. Gingivitis and stomatitis developed in four, all of whom had prior poor oral hygiene. A dermatitis appeared in two subjects but did not recur in one of these with reinstitution of the drug. Gastrointestinal symptoms accounted for discontinuance in two and renal irritation in one subject with preëxisting nephrosis. Inadequate diuresis was observed in one subject with chronic renal disease and in four of the cardiac subjects (12.5%). Of the latter, those with severe recurrent heart failure with fixed hepatomegaly and ascites were the least responsive, possibly on the basis of poor absorption of the mercury. It is concluded that Neohydrin is an effective and reasonably safe oral diuretic in ambulatory patients with mild to moderate congestive heart failure. Side effects are less frequent and less severe in comparison with parenteral mercurials, with the exception of the occurrence of gingivitis in patients with poor oral hygiene.—J. M. Evans, M.D., and R. A. Massumi, M.D., Use of Neohydrin in Ambulatory Patients, *Annals of Internal Medicine*, January, 1956.

CLINICAL NOTES

NITROFURANTOIN (FURADANTIN) IN TREATMENT OF URINARY TRACT INFECTIONS

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Nitrofurantoin (Furadantin) has been found to be an effective bactericide both in vitro and in vivo. This paper reports on its use in the treatment of 112 cases of acute, persistent, or relapsing infections, the majority of which were found to be resistant to other chemotherapeutic agents and antibiotics.

Material and Methods

All the patients in this study were ambulatory and from private practice. A total of 112 patients was studied, but 5 are usually deleted in the following discussion because of inadequate follow-up. The patients' ages ranged from 3 to 87 years; 41 were males and 66 females. Any infection of less than three months' duration was classed as acute. There were 73 chronic and 34 acute cases. In all instances the patients considered as having chronic conditions had previously been treated with one of the sulfonamides and one or more of the most common antibiotics, alone or in combination. The chronic cases had proved to be refractory to all other medication, and the efficacy of nitrofurantoin on these patients was in inverse proportion to their anatomic defects. No recurrence of infection after cessation of medication for six weeks was considered a cure.

Bladder urine specimens were taken either at the time of cystoscopic examination or by catheter, under aseptic techniques. Collection was made in sterile centrifuge tubes and placed directly into culture tubes containing 5 ml. of nutrient broth. As progress checks, specimens were collected in sterile centrifuge tubes, spun down, and the sediment cultured. The sediment was suspended in nutrient broth and in thioglycollate anaerobic medium. Growth was streaked on blood agar plates, desoxycholate–citrate agar plates, and on eosin–methylene blue agar plates. Blood plates were incubated aerobically and anaerobically at 37 C. The sediment was initially gram stained and later compared to gram stains of the culture plate growths to rule out contamination. Bacterial isolates were inoculated in Kligler's iron agar and from there transferred to the usual carbohydrate broths. Additional tests included, when indicated, were gelatin, litmus milk, urea, methyl red–Voges–Proskauer, and indole–methyl red–Voges–Proskauer citrate. The effectiveness of nitrofurantoin was based on immediate sterilization of the urine and absence of relapse after discontinuance of medication. An attempt was made to correlate a recurrence with the existing uropathy and clinical symptoms.

From the Elmer Belt Urologic Group.

The nitrofurantoin used in this study was supplied as Furadantin by Eaton Laboratories, Norwich, N. Y.

Tablets were administered to all patients including the children. (Nitrofurantoin oral suspension was not available at the beginning of this study.) Therapeutic action was rapid, within 8 to 36 hours. Quite often the urine was culturally as well as microscopically negative within 24 hours. Adult patients weighing 100 to 160 lb. (45.4 to 72.6 kg.) received 100 mg. of nitrofurantoin three times a day; those over 160 lb. received 100 mg. four times a day. Children received 50 mg. twice or three times a day, depending upon weight. A standard course of two weeks' treatment was prescribed, although it was not always followed because of the rapid effectiveness of the drug. Increased dosage or an extended course of more than two weeks' treatment failed to improve primarily uncontrolled cases. Although the outlook for successful treatment of many of the chronic cases seemed to be unfavorable because of unresponsiveness to other medicaments, including the sulfonamides, and because of anatomic abnormalities, such patients were all the more sought out to better determine the in vivo effectiveness of the medicament as well as to provide a diversity of cases necessary to assay its full therapeutic value. Bacterial sensitivity tests were performed in 89 cases.

Because of the preponderance of chronic cases over acute ones, we have set up two types of percentages: the first pertains to uncontrolled cases, while the second deals with the uncontrolled cases plus the recurrences, adding up to the total failures. We felt that the percentage of total failures alone would be misleading, since no medicament could be expected to produce a cure in many of these patients with chronic cases because of the pronounced structural defects. Nevertheless, some of these patients with seemingly impossible cases were cured of their infection. Three of four patients with neurogenic bladder were treated successfully with a combination of nitrofurantoin and carbachol (Doryl). To date, their condition has not recurred despite the discontinuance of nitrofurantoin therapy. One patient in particular has been free of infection for over eight months. These cases had resisted stubbornly all other treatment and medicaments.

Mixed bacterial infections comprised 5.3% of the total number of cases. Escherichia coli and Aerobacter aerogenes were almost evenly divided as the predominant urinary pathogens. We felt that it might be interesting to investigate the genus Proteus in terms of its individual species, and it proved to be so. In contrast with the study by Carroll and Brennan,[1] who found nitrofurantoin controlled 9 out of 10 P. vulgaris infections, we found that only 50% of this species was controlled, while, with recurrences added, it had a failure incidence of 83.3%. P. mirabilis was an even greater problem, with a total failure incidence of 100%. However, P. morganii and P. rettgeri were both controlled 100% of the time, with a recurrence of infection in one of four cases, providing an inaccurate percentage of failure because of the small number of cases. Combining the results of the diverse Proteus infections we found that 30% were not controlled, with a total failure incidence of 65%. Except for Micrococcus (Staphylococcus) pyogenes var. aureus, with a total failure incidence of 66.6%, the remaining organisms were too few for their percentile values to be significant.

Results

Determination of Effectiveness.—Effectiveness of nitrofurantoin was determined from three criteria: 1. If the urine was sterilized the infection was considered controlled. 2. If the urine remained sterile six weeks after cessation of medication the patient was considered cured. 3. If the urine remained infected, or there was a relapse, it was considered a failure (table 1). As stated previously, in most chronic cases there were such pronounced structural defects that no chemotherapeutic agent or antibiotic could be expected to produce a permanent cure. Infection was considered controlled when cultures were negative. All cases in which a sterile culture was not shown, except for one Esch. coli infection, were chronic. These patients had the following uropathy: urethral and ureteral strictures five, persistent urinary calculi one, postoperative perineal prostatectomy one, contracted bladder one, hydronephrosis three, prostatitis one, cystitis cystica three, secondarily infected interstitial cystitis two, and chronic pyelitis one.

Of the 27 recurrences, only one was an acute infection (P. mirabilis). Pathological findings were as follows: urethral and ureteral stricture five, persistent urinary calculi one, contracted bladder neck three, hydronephrosis nine, secondarily infected interstitial cystitis one, chronic pyelitis three, ureteral transplant from vagina to bladder one, chronic cystitis two, hypospadias one, neurogenic bladder one, and acute cystitis one.

Two infections, both A. aerogenes, although recurring within the six weeks' period that classified them as recurrent, were found to be new infecting organisms, both Alcaligenes faecalis, rather than recurrences. This presented interesting hypotheses that perhaps the recurrence period allowed should be considerably less than six weeks and that some of the 27 recurrences were in actuality new organisms. It was interesting to note that in two of the acute cases Pseudomonas sp. was the causative organism. Both cases were cured by nitrofurantoin. The favorable result here is at variance with reports by others, and we believe the acuteness of the infection and the lack of pronounced uropathy are the reasons for its success.

Taking particular note of the structural defects, it can be readily seen that nitrofurantoin is extremely effective against all organisms invading the genitourinary tract except those of M. pyogenes, P. vulgaris, and P. mirabilis.

Sensitivity.—With diagnostic tablets, 89 bacteria were tested for sensitivity. There were nine cases that were found to be insensitive in vitro, yet, paradoxically, four of these did respond in vivo. All four were acute infections involving P. mirabilis (two), P. rettgeri (one), and A. faecalis (one). Only one (P. mirabilis) of the four recurred. In the majority of cases, nitrofurantoin was effective clinically, with a pronounced improvement, indicated by the appearance of the urine as well as by verbal commendation by the patient, within 24 to 36 hours. In view of these results, we are of the opinion that nitrofurantoin-sensitivity tests are not entirely necessary but should be done for accuracy whenever possible to save time and money.

Results in Children.—Of the 107 cases, there were 10 involving children between the ages of 3 and 13 years. Even though nitrofurantoin was effective in all 10 cases, there were recurrences in 7. Table 2 shows that percentile values, because of the small number of cases involved, would be misleading, so they have not been included. There were eight chronic cases, with pathological findings of chronic pyelitis (one), hydronephrosis (three), contracted bladder neck (one), neurogenic bladder (one), ureteral transplant from vagina to bladder (one), and ureteral stricture (one). In the two acute cases there were pathological findings of urethral stricture and pyelitis in one each. Only one of the 10 patients was a male. Side-reaction (nausea) was experienced in only one case; this is questionable, inasmuch as the girl is a problem child.

The comparison between the children's results and the total is as follows: 1. Of the Esch. coli infections 13.5% were in children, yet 25% of the recurrences and 18.7% of the total failures occurred in children. 2. Of the P. vulgaris infections 33.3% were in children, yet they comprised 66.6% of the controlled, 0% of the uncontrolled, 100% of the recurrences, and 40% of the total failures. 3. The sole recurrence and failure of P. morganii was in a child. 4. Children accounted for 20% of the total Proteus infections, with 57.1% of the recurrences and 30.7% of the total failures (table 3).

TABLE 1.—*Results of Nitrofurantoin Therapy in 112 Patients*

Organism	Times Isolated	Controlled	Uncontrolled		Recurrence	Laboratory Sensitivity	Laboratory Insensitivity	Failure *	
			No.	%				No.	%
Escherichia coli	37	33	4	10.8	12	29	1	16	43.2
Aerobacter aerogenes	39	34	5	12.8	7	35	..	12	30
Paracolobactrum sp.	1	1	..	‡	..	1	..	..	‡
Proteus vulgaris	6	3	3	50	2	1	3	5	83.3
Proteus mirabilis	6	3	3	50	3	2	3	6	100
Proteus morganii	4	4	..	‡	1	4	..	1	‡
Proteus rettgeri	4	4	..	‡	1	3	1	1	‡
Pseudomonas sp.	2	2	..	‡	..	1	..	..	‡
Micrococcus (Staphylococcus) pyogenes var. albus	2	1	1	‡	..	1	..	1	‡
Micrococcus (Staphylococcus) pyogenes var. aureus	6	3	3	50	1	3	..	4	66.6
Streptococcus faecalis	3	2	1	‡	..	..	..	1	‡
Alcaligenes sp.	1	1	..	‡	..	..	1	..	‡
Nonspecific prostatitis	1	..	1	‡	..	..	..	1	‡
Total	112 †	91	21		27	80	9	48	
Total %	100	81.2	18.8		24.1	89.9	11.1	42.8	

* Includes uncontrolled cases plus recurrences. † Includes mixed infections. ‡ Percentile values insignificant.

TABLE 2.—*Results of Nitrofurantoin Therapy in Children*

Organism	No.	Controlled	Uncontrolled	Recurrence	Laboratory Sensitivity	Laboratory Insensitivity	Failure
Escherichia coli	5	5	0	3	4	0	3
Aerobacter aerogenes	1	1	0	0	1	0	0
Proteus vulgaris	2	2	0	2	1	0	2
Proteus mirabilis	1	1	0	1	1	0	1
Proteus morganii	1	1	0	1	1	0	1
Total	10	10	0	7	8	0	7

Side-Reactions

Thirteen patients, or 12% of the total, had one or more of the following side-reactions: nausea, emesis, chills, fever, rash, and dizziness. One case of dermatitis medicamentosa was severe, requiring hospitalization. One patient showed bile in the urine, which disappeared upon cessation of medication. One patient had a slight sensation of pressure in the rectum and around the heart. All cases of nausea (8%) occurred before we prescribed that the medicament be taken with meals. Five patients had cessation of nausea upon reduction of dosage, but this occurred prior to taking the drug with meals.

Summary and Conclusions

Nitrofurantoin (Furadantin) was found to be an effective chemotherapeutic agent for combating urinary tract infections in 107 patients, particularly those infections caused by Escherichia coli, Aerobacter aerogenes, Proteus rettgeri, and P. morganii. Any effectiveness was noted within 8 to 36 hours. This compound appeared singularly effective, in conjunction with carbachol (Doryl), in curing neurogenic bladder infections. Micrococcus (Staphylococcus) pyogenes var. aureus, P. vulgaris, and P. mirabilis were the most resistant organisms encountered. Forty-eight of the 112 strains isolated were not satisfactorily controlled. Of these, 21 were wholly unaffected by the drug, while there were 27 recurrences, sometimes with new bacteria. Children accounted for 9% of the total number of infections, with 11% of the controlled, 26% of the recurrences, and 14.6% of the total failures. Total cures before recurrences were 81.2% and after recurrences 57.2%. Side-reactions were minimal, being less than 10%, with severe reactions of less than 1%.

TABLE 3.—*Results of Nitrofurantoin Therapy in Children Compared to the Total*

Organism	% of Total Cases	% of Total Controlled	% of Total Uncontrolled	% of Total Recurrences	% of Total Failures
Escherichia coli	13.5	15.1	0	25	18.7
Aerobacter aerogenes	2.5	2.9	0	0	0
Proteus vulgaris	33.3	66.6	0	100	40
Proteus mirabilis	16.6	33.3	0	33.3	16.6
Proteus morganii	25	25	0	100	100
Total Proteus sp.	20	28.5	0	57.1	30.7

1893 Wilshire Blvd. (57) (Dr. Stewart).

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PNEUMATIC CUFF FOR TEMPORARY OCCLUSION OF ARTERIES

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It is not an uncommon occurrence for an intracranial aneurysm to rupture while it is being exposed at craniotomy. When this occurs, the resulting furious bleeding seriously hampers the surgeon's attempts to ligate or clip the neck of the aneurysm. Bleeding from the ruptured aneurysm can be stopped by temporary occlusion of both common and both vertebral arteries, affording the surgeon a much better opportunity of bringing the lesion under control. With the patient under hypothermia, arrest of the cerebral circulation has been maintained in this way for periods up to 14 minutes without evidence of brain damage.[1]

The occlusion may be achieved by closing arterial clamps previously placed on the exposed arteries in the neck or by exerting traction on a loop of tape encircling each artery [2] and threaded through a catheter. Both methods are effective, but they have the disadvantage of requiring a separate manipulation to close or open the lumen of each artery. In addition, as has been reported,[1] the clamp may cause mechanical damage to the vessel wall with subsequent thrombosis. It was these considerations that led us to develop for this purpose a miniature pneumatic cuff based on the principle of the blood pressure cuff.

The cuff consists of a piece of cellophane tubing 1 cm. in flat width and about 8 cm. long. One end of the cellophane tubing is tied to the amputated end of a no. 8 F. soft rubber catheter into which a short section of a 16-gauge needle has been previously inserted so that tightening of the ligature will not collapse the lumen of the catheter. The distal end of the cellophane tube is then ligated, leaving the ends of this ligature long for use during its application. The somewhat brittle cellophane tubing is moistened with water in order to soften it while the device is being assembled, autoclaved, and applied. (Because of its inelasticity, cellophane proved to be superior to latex for this purpose.)

In applying the device, the cellophane cuff is passed twice around the common carotid artery and the distal end is tied to the proximal end, where it is fastened to the catheter. This assures total occlusion of the artery when the cuff is inflated. In order to prepare for occlusion of the vertebral artery, it is only necessary to expose a vertebral foramen in the transverse process of one of the cervical vertebrae and draw a cellophane cuff partly through it (see figure). The four catheters are then connected by a series of T-tubes to an ordinary blood pressure apparatus, so that all four arterial cuffs may be activated simultaneously and by remote control. The blood pressure apparatus records the pressure and also acts as a reservoir in case a slow leak is present in the system.

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The cellophane tubing described may be obtained from the Visking Corporation, 6733 W. 65th St., Chicago 38.

When moistened, the cellophane tubing withstands inflation to pressures in excess of 1,300 mm. Hg. In animal experiments we have found that raising the pressure within the cuff to a value of 50 mm. Hg above systolic pressure assures complete occlusion of the artery. Deflation of the blood pressure cuff, of course, relieves the occlusion.

The pneumatic cuff principle of arterial occlusion has been employed in two cases in which an intracranial aneurysm ruptured during exposure. One of these was on the anterior communicating artery and the other on the left middle cerebral. Both patients were under hypothermia when operated on, and both recovered with no residual symptoms. It is believed that the good results in these two difficult cases were in large part due to the hemostasis that this method afforded.

Method of applying arterial cuff to vertebral (*a* and *b*) and common carotid arteries (*c*).

2020 E. 93rd St. (6) (Dr. Gardner).

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Cholecystostomy.—Approximately 60% to 65% of patients having a cholecystostomy for acute gall-bladder disease remained symptom-free. Of patients having cholecystostomy for chronic gall-bladder disease, 45% remained symptom-free for a while. However, as time passed, more and more of these patients showed evidence of gall-bladder disease. It would seem that cholecystostomy alone is not the poor procedure in acute cholecystitis that some authors indicate. It cannot be considered a good elective procedure, however, if 35% of patients develop recurrence of symptoms and gall-bladder disease necessitating further surgery. Cholecystostomy is definitely a poor procedure in chronic cholecystitis. . . . Cholecystectomy following cholecystostomy for acute cholecystitis would seem to be indicated only in those patients who subsequently develop gall-bladder disease. The patient may fall into the 65% group that remains free of symptoms and presumably of disease as well.—B. B. Clark, M.D., and W. T. Livingston, M.D., Evaluation of Cholecystostomy, *A. M. A. Archives of Surgery*, February, 1956.

ALLERGIC HYPERSENSITIVITY TO AN ANTISEPTIC SOAP

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Currently produced bar soaps that are used for personal hygiene and that contain no special ingredient seldom produce a dermatitis when not used excessively. Excessive use of soap and water may be partly responsible for a dermatitis or may aggravate a preexisting dermatitis. In such cases it is now thought that the action of the soap is not that of an allergen. The rare individual who is thought to be allergically hypersensitive to a bar soap is often shown to be sensitive to some ingredient other than the alkaline salts of the fatty acids—the true soaps. Patients have been observed who are hypersensitive to a dye or a perfume in a soap.

Until recent years, antiseptic soaps have not been used by a very large percentage of the population. Formerly a soap containing a mercury salt was sometimes used by physicians and surgeons. Phenol and phenolic derivatives were occasionally added to soaps. When these substances are incorporated into soaps, their ability to kill bacteria on the cutaneous surface is not great. Persons known to be allergic to mercury would develop a dermatitis if they used a soap containing a mercury salt.

In 1944, Traub, Newhall, and Fuller [1] found that, after about three days of repeated use of a soap containing hexachlorophene, a chlorinated bisphenolic compound, the resident flora of the cutaneous surface is reduced. The bacterial population remains low as long as such a soap is used. Such a soap when used only once, however, reduces the bacterial population no more than does a regular soap containing no antiseptic.

The work of Shelley, Hurley, and Nichols [2] has shown that bacterial decomposition of the excretions from the apocrine glands is responsible for much of the axillary odor. It is apparent, therefore, that if bacterial growth on the cutaneous surface can be controlled, axillary odor should decrease. Thus, it appears logical to suggest the routine use of a soap of this type by the general population in an attempt to control bacterial growth and thus reduce axillary odor. Recently, a large company began marketing a bar soap (Lifebuoy) containing tetramethylthiuram disulfide and claimed that it reduced the bacterial population of the cutaneous surface and helped control axillary odor.[3]

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Baer and Rosenthal [4] also studied this new soap and verified the claim that the bacterial population was decreased. We also investigated this soap by methods previously described for hexachlorophene soap [5] and found that, for those subjects studied, this soap reduced the bacterial population of the cutaneous surface by an amount comparable to that seen for a soap containing hexachlorophene.

I was concerned, however, about the sensitizing potential of this soap. The antiseptic is the same chemical as is used by the rubber industry as an accelerator. In another study [6] it had been shown that, even though this is not the commonest allergen in rubber adhesives used for the manufacture of shoes, nevertheless several patients were observed to be allergically hypersensitive to this compound and to chemically related substances. It was my concern that, if this soap was used by many persons, a sizable number might develop a hypersensitivity to it.

Sensitivity Tests

I received good cooperation from the company manufacturing this soap. Patients who had been shown to be allergic to this chemical in rubber adhesives were recalled and tested for their sensitivity to the soap and to the specific chemical used in the soap as supplied by the manufacturer. The soap itself was applied to the skin and also an 8% aqueous solution of the soap. As a control a soap that appeared to be identical but contained none of the antiseptic was used. The antiseptic and a rubber accelerator of similar chemical composition were tested in 1% concentration in petrolatum. The test samples were allowed to remain on the skin for 48 hours. Reactions were read on removal and one hour after removal.

Results of Patch Tests for Sensitivity to an Antiseptic Soap and Rubber Accelerators in Patients Known To Be Hypersensitive to Thiuram Sulfide Compounds

Agent	Case No. 1	2	3	4	5	6
Tetramethylthiuram disulfide (rubber accelerator)	Vesicle	Vesicle	Vesicle	Vesicle	Vesicle	Negative
Tetramethylthiuram disulfide (antiseptic)	Vesicle	Vesicle	Vesicle	Vesicle	Vesicle	Negative
Tetramethylthiuram monosulfide (rubber accelerator)	Vesicle	Vesicle	Vesicle	Vesicle	Vesicle	Vesicle
Antiseptic soap (as is)	Vesicle	Vesicle	Vesicle	Vesicle	Vesicle	Erythema
Antiseptic soap (8% solution)	Vesicle	Vesicle	Vesicle	Vesicle	Vesicle	Not done
Control soap (as is)	Erythema	Erythema	Erythema	Negative	Erythema	Erythema
Control soap (8% solution)	Erythema	Negative	Negative	Negative	Negative	Not done

The results of these tests on six patients are shown in the table. All patients who showed a vesicular reaction to the rubber accelerator also showed a vesicular reaction to the antiseptic, to the antiseptic soap, and to an 8% solution of this soap. Reactions to the control were mild and of the type seen on almost all persons tested in this manner to regular soaps. No significant reactions were seen to the 8% aqueous solution of the control soap. One patient (case 6) who was allergic to a chemically related rubber accelerator did not react to the antiseptic or to the soap containing the antiseptic.

The forearm of one of these patients was swabbed for two minutes with an aqueous solution of the antiseptic soap and then rinsed. A similar 10-minute application was made on a second patient. Each patient showed an

erythema on the swabbed area 24 hours after the application of the soap solution. Five of these patients were considered sufficiently hypersensitive to this soap so that I hesitated to perform any further usage tests.

At this point in my investigation, I informed the manufacturer that I suspected that any person who had developed an allergic hypersensitivity to this antiseptic as a result of contact with it in rubber articles would probably develop a dermatitis if he used this soap. I also pointed out that persons not previously allergic to this compound might develop a hypersensitivity to it from repeated use of the soap. The manufacturer reported that other investigators [4] had not found a high index of sensitivity to the soap, and it was their considered opinion that my work, together with much data that they had, did not indicate the likelihood of any serious sensitivity developing from this product. They agreed to maintain a close watch for any tendency toward an increase in allergic hypersensitivity among consumers.

I, too, have attempted to watch closely for patients with a dermatitis resulting from the use of this soap. To date I have not seen any patient with a dermatitis in whom we could prove that the dermatitis was due to an allergic hypersensitivity to this soap. Four reasonably well-substantiated cases of allergic hypersensitivity to this product have been reported to me by two physicians. I have been informed by the company that they have attempted to investigate all claims of dermatitis caused by the soap. During the past 17 months, there has been reported to the company about one case of skin irritation to this soap per 2 million bars sold. In not more than half of these cases is there evidence giving cause to suspect allergic hypersensitivity. Their reports indicate no more allergic hypersensitivity to this soap than to the same product before the addition of the new antiseptic. Their records show no rising trend in the incidence of allergy to the new product during the time it has been in use.

Conclusions

No new product that will come in contact with the skin reaches the consumer market without a certain risk that a dermatitis might develop from this contact. Quite early in the development of an antiseptic soap, there seemed reason to believe that the index of sensitization might be high. However, controlled clinical tests before marketing showed that sensitization probably would not be a problem; two years of market experience do not indicate a high sensitization index. Very few cases of allergic hypersensitivity to this soap have been reported. Physicians, however, should be alert to the possibility of a dermatitis from this soap.

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SENSITIZATION TO FACIAL TISSUES WITH UREA-FORMALDEHYDE RESIN (WET-STRENGTH)

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Every dermatologist will not too infrequently encounter in his practice a case of dermatitis that is limited to the eyelids, the circumoral region, or other area of the face, where it is difficult or even impossible in many instances to find the etiological agent. Sulzberger,[1] in 1937, demonstrated that nail polish was the etiological agent in some of these cases, but others still defy solution. It occurred to us, with the recently introduced use of facial tissues impregnated with synthetic resins to make them stronger when wet, that perhaps such chemicals could also play an etiological role in contact dermatitis of the face that is of unknown origin.

Technology of Paper Impregnation

The present use of synthetic resins on a large scale to make tissues strong when wet is based on the fact that some synthetic resins may be prepared that are water-soluble in the low polymer condition and when incorporated with paper fiber may be polymerized in situ to give a high degree of wet-strength.[2] The amount of resin required for most purposes is usually less than 2% resin to the weight of the paper. As far as we could determine, the majority of manufacturers employ urea-formaldehyde or melamine-formaldehyde resins for this purpose.

Both melamine-formaldehyde and urea-formaldehyde are known as thermosetting resins. They are always applied in an intermediate state of condensation, which is characterized by solubility or formability. They are then subjected to a heating or curing treatment, which causes the condensation reaction to go to completion, with complete loss of formability and solubility. Only the cured or thermoset resins can condition paper to be strong when wet. The amount of heat required for complete cure is such that very few paper machines are equipped to produce completely cured paper on the paper-machine reel. It is well known that it is the incompletely cured resins that cause dermatitis most often.

Both melamine-formaldehyde and urea-formaldehyde resins have been incriminated as strong sensitizing agents.[3] Pirilä and Kilpiö in 1949 [4] cited 30 cases of dermatitis, 24 of which were due to formaldehyde and formaldehyde resins. Morris has shown that in his statistics 6% of dermatitis seen by the industrial dermatologist was caused by plastics.[5] More pertinent to our findings about to be reported was the publication by Horsfall, in 1934. This author showed that a 1 to 8 million concentration of formaldehyde could produce reactions of sensitivity. When such a sensitivity occurred, its cause was confined to formaldehyde and not to closely related chemicals.[6]

Materials and Methods

Two facial tissues were used in our experiments. Facial tissue "B" is featured as having added wet-strength. Tissue "A" has no additive as far as we could ascertain. To identify the resins, if any, in these two tissues, they were subjected to two well-known methods for the identification of wet-strength resins in paper. One has recently been published by J. C. Barthel [7] and the other by R. R. House and N. T. Woodberry.[8] The results of tests by both of these methods indicated that tissue "B" contained a urea-formaldehyde resin, whereas tissue "A" did not contain either melamine-formaldehyde or urea-formaldehyde resin.

Because we believed that the concentration of the resin or of the formaldehyde solution (Formalin) available for sensitization was probably low, we used the Draize-Shelanski [9] technique of the repeated insult test, instead of the commonly used patch test.[10] In the former method, the test substance is applied to the skin of human subjects by means of a patch for 24 hours, and it is then removed. The skin is allowed to recuperate for 24 hours, and the cycle of contact and recuperation is repeated 15 times.

Fifty subjects were chosen at random and used in the experiment—15 males and 35 females. Patch tests were applied to the upper outer arm, and at the same time there was a usage test on the face. The right arm was used for tissue "B" and the left for tissue "A." One inch square of tissue was used in each instance. There were at least 12 repeated tests made on each subject, with the exception of those who showed reactions. At the same time, we rubbed tissue "B" daily with a brisk, rotary motion on the right cheek of each subject, and tissue "A" was rubbed on the left cheek. There were 90 rubs in one minute at each usage test. Unless a reaction was found to develop, the usage test was performed daily, with the exception of Sunday, for the 30-day period. The tissues were moistened for the patch tests but were used as is for the experiments that were made on the face.

Results

We found a sensitivity reaction in 3 of our 50 subjects, or 6%. Since each illustrates a phase of this problem, we are briefly summarizing our findings in the three cases described below.

CASE 1.—The subject was a white female, aged 45, with a blond skin. There was no history of allergy. After the third patch test, eight days after the initiation of the experiment, there was seen on the right arm, where tissue "B" had been applied, a typical positive patch test consisting of redness, swelling, and vesiculation. The reaction became more marked in the next 24 hours. There was no reaction with tissue "A." The patch test with tissue "B" was repeated 48 hours later and showed a 3+ reaction. On the ninth day, the right side of the face, which was being rubbed daily with tissue "B," began to show redness, edema, and some vesicle formation. No reaction was seen on the left side of the face, where tissue "A" was rubbed in. The dermatitis of the right cheek gradually increased in the next 24 hours, until there developed a definite eczematization with scattered vesicles. Patch tests on the 12th day with 1% formaldehyde solution gave a 2+ reaction and with 10% formaldehyde solution a 4+ reaction.

CASE 2.—The subject was a white male, aged 39, with a swarthy skin. He developed a positive test to tissue "B" after the ninth patch test. This was 21 days after the initiation of the experiment. There was no reaction to tissue "A." A repeat patch test with tissue "B" 48 hours later gave a similar positive reaction. He showed a 3+ reaction to 10% formaldehyde solution and a 2+ reaction to the 1% formaldehyde solution. At the time when he showed a positive patch test to tissue "B," there was as yet no reaction from the usage test. For this reason the daily usage tests were continued, and 39 days after the initiation of the experiment he developed an erythematopapular eruption on the right side of the face where tissue "B" was being rubbed in. The experiment was stopped. Sixteen days later, he developed a cold and inadvertently began to use tissue "B" many times. Twenty-four hours later, there was seen a vesicular dermatitis around the nose and upper lip.

CASE 3.—The subject was a young white female who was known to have a sensitivity to formaldehyde, developed in her work as a technician. She had previously shown a positive patch test to 5% formaldehyde solution. After the 12th patch test, positive reaction developed from tissue "B." The patch test with 1 and 5% formaldehyde solution was still positive. We could not elicit any reaction in the 30-day period of the usage test.

Summary and Conclusions

An experiment with facial tissues impregnated with synthetic resins, such as the urea-formaldehyde resins, clearly indicates that these tissues are capable of sensitization. There was no reaction to the use of a tissue that did not contain resins. The purpose of this communication is to acquaint the physician with the fact that tissues identified commercially as having wet-strength definitely caused facial dermatitis in a significant number of subjects, whereas in no case was there reaction when the tissue used was free of chemical additives. Since the amount of free resin or formaldehyde available for sensitization or elicitation of reaction is probably small, it is important to do a patch test not only with the suspected tissue but also with a 1% solution of formaldehyde (Formalin). It is quite possible that a routine patch test with the tissue that is left on for 24 or even 48 hours may fail to give a positive patch test, but in the presence of breaks in the skin, such as those following a cold, the use of such wet-strength tissues could definitely cause a dermatitis. This might also result after perianal fissures or excoriations.

33 E. 70th St. (21) (Dr. Peck).

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COUNCIL ON PHARMACY AND CHEMISTRY

Report of the Council

The Council has authorized publication of the following reports.

H. D. KAUTZ, M.D., *Secretary.*

CURRENT STATUS OF THERAPY IN LEUKEMIA

The leukemias are considered generally to be malignant neoplasms of the hemopoietic organs. The disease, or group of diseases, is characterized by an extensive and abnormal proliferation of the white blood cells and their precursors, accompanied by cellular infiltrations into the bone marrow, spleen, lymph nodes, and other body tissues. Anemia and purpura regularly develop in the early stage of the disease due to hypoplasia of the normal marrow elements; as the disease progresses, the marrow is replaced by leukemic tissue.

Two general types of leukemia, acute and chronic, may be distinguished by the rate of progression of the disease and by the degree of differentiation of the leukemic cells. Further differentiation into granulocytic (myelogenous, myeloid), lymphocytic (lymphatic, lymphoid), or monocytic leukemias may be possible, although the leukemic cells may be undifferentiated to such a degree that no agreement as to cell type can be reached.

Acute leukemia is commonest in children in the first five years of life but can occur at all ages. Chronic leukemia occurs in men somewhat more frequently than in women and is encountered most commonly in the fifth and sixth decades of life.

Specific Therapy

Specific antileukemic therapy currently in use falls into three categories: irradiation, hormones, and chemotherapeutic agents. For the selection of the appropriate method, factors such as the age of the patient, the cytological type of leukemia, its acuteness or chronicity, the degree of organ infiltration, and the state of the marrow productivity should be considered.

Therapeutic response is classified as a complete or partial hematological remission or a clinical remission only. A complete hematological remission can be claimed only when the peripheral blood findings for hemoglobin, erythrocytes, leukocytes, and platelets return to normal levels and the marrow findings revert to normal. A clinical remission invariably occurs if there is a complete hematological remission. In the incomplete hematological remissions, improvement in the blood and marrow occurs without obliteration of the leukemic cells, and clinical improvement also is usually present, although less prolonged. In the remission classified as clinical only, subjective and objective improvement occurs, with gain in weight, loss of fever, improvement in appetite, and a sense of well-being. Regression of the hepatomegaly, splenomegaly, and lymphadenopathy also occurs, but without a satisfactory improvement in the marrow findings.

No curative method has been developed for any type of leukemia; however, therapy should be attempted in all cases because remissions obtained by judicious selection and use of available chemotherapeutic agents have been well demonstrated. In acute leukemias of childhood, the duration of life is prolonged by therapy. Although adults respond less well, the subjective benefits also may justify therapy of adults with leukemias.

Acute Leukemias.—The acute leukemias run a rapidly fatal course and differ also from the chronic forms in their cytology. The undifferentiated stem-cell, myeloblastic, and monocytic leukemias run an acute course, whereas the small lymphocytic and granulocytic cell types are found in the subacute and chronic forms. Although a specific antileukemic agent has not been developed against a particular cell type, significant differences in the therapeutic effects of various agents for the several types of cells have been demonstrated clinically.

The stem-cell and lymphoblastic leukemias respond to antifolic compounds, the purine antagonists, and adrenocortical hormones and steroids; the granulocytic and monocytic leukemias respond poorly to the hormones and only somewhat better to the purine antagonists. The acute leukemias of childhood respond better to all agents than those of the adult.

The folic acid antagonists are the most effective antimetabolites employed. This group includes aminopterin (4-aminopteroylglutamic acid) and A-methopterin (4-amino-N^{10}-methylpteroylglutamic acid). These drugs have induced hematological and clinical remissions in over 50% of cases of acute lymphocytic leukemia in children, depending on the skill of the physician in manipulating these drugs. Less satisfactory results have been obtained in adults, although some respond satisfactorily with periods of remission. Aminopterin is available as the sodium salt. The usual oral dose is 0.25 to 0.5 mg. daily for children and double that for adults; the intramuscular dosage is the same. A-methopterin is administered as the sodium salt and requires 5 to 10 times this dosage. A significant increase in survival time has been obtained in patients who respond to therapy.

Toxic effects develop frequently with these drugs. The first symptoms of toxicity are seen in the mouth, where shallow ulcers appear on the buccal mucosa and extend to the gingiva. Severe toxic signs include skin eruptions, alopecia, vomiting, mucous diarrhea, melena, leukopenia, and severe bone marrow depression. These toxic effects can be alleviated by withdrawal of the drug. Intramuscular injections of the calcium salt of leucovorin (folinic acid, citrovorum factor) also may be tried for extreme overdosage.

The purine antagonist mercaptopurine (6-mercaptopurine) has been shown also to be of value in the treatment of acute lymphocytic leukemias, particularly in children and, to a lesser degree, in acute granulocytic leukemia. The usual daily dosage is 50 to 100 mg. orally for children or about 2.5 mg. per kilogram of body weight. Toxic manifestations are bone marrow aplasia and ulceration of intestinal epithelium. This drug has a specific leukopenic effect, which occurs after 5 to 10 days of administration and before a marrow hypoplasia occurs. This leukopenic effect can be anticipated and controlled by intermittent use of the drug but also may be a limiting factor in the usefulness of the drug in a given patient. It is less toxic to the mucosa of the gastrointestinal tract than are the folic acid antagonists.

It is of interest that mercaptopurine is able to produce remissions in a certain percentage of children whose disease is resistant to the folic acid antagonists or to the steroids. Similarly, in patients whose disease is resistant to mercaptopurine, the steroids and A-methopterin also may produce further remissions. In adults mercaptopurine appears to be the compound of choice. The antagonist of guanine, 8-azaguanine, has been undergoing experimental evaluation, but results are inconclusive at present.

The hormones of benefit in acute leukemia are corticotropin and cortisone. Initial remissions have been reported in 70 to 75% of the cases of acute undifferentiated leukemia in children, but the response in myeloblastic and monoblastic types is less favorable. The duration of remission is short, lasting 3 weeks to 3 months. Although subsequent remissions may follow another course of hormone therapy, it is generally considered advantageous to combine therapy with an orally administered corticosteroid and one of the chemotherapeutic agents when relapse occurs. The average dose of corticotropin is 50 to 200 mg. per day intramuscularly or 20 to 50 mg. daily by constant intravenous drip. Cortisone may be administered orally or intramuscularly in doses of 25 to 100 mg. every 6 hours. Electrolyte imbalance, hypertension, mental changes, and supervening infection are possible complications of hormonal therapy. Resistance to these compounds appears rapidly after one or two courses of therapy.

Sequential use of agents, particularly in acute leukemia, rather than combination therapy, has been followed empirically for years. Combination therapy, including two or more drugs that work by different mechanisms, might seem to be a more complete therapy, but somewhat better results and longer survival times have been obtained by using one agent until resistance to it develops and then shifting to another antimetabolite. Corticotropin and cortisone are employed when resistance has developed to the antimetabolites or when emergencies occasioned by hemorrhagic manifestations occur.

Chronic Granulocytic Leukemia.—Irradiation, either by x-ray or radioactive phosphorus, is the most effective therapy developed for the chronic granulocytic type of leukemia, but this treatment can be employed only in areas with adequate facilities and personnel. X-ray may be administered either as a total body spray or as intensive direct irradiation of the spleen. Radioactive phosphorus may be administered orally or intravenously in solution as sodium radio-phosphate (P^{32}). The solution is commonly prepared to contain 1 mc. (millicurie) per milliliter. Single doses of 2 to 7 mc. have been used. Radioactive phosphorus has the advantage over x-ray of not causing radiation sickness and has been shown to be approximately as effective as x-ray. Radioactive gold has been under investigation as a therapeutic agent in chronic granulocytic leukemia, but is not yet generally recognized as useful for this purpose.

Of the chemotherapeutic agents used in chronic granulocytic leukemia, the nitrogen mustards and derivatives have been used most widely. Mechlorethamine hydrochloride (nitrogen mustard, HN_2) is best given by injection into a rapid saline intravenous infusion to minimize the danger of thrombosis. Total dosage may be given at one time or divided into daily doses of 0.1 mg. per kilogram of body weight for 4 days. Nausea, vomiting, and severe hematological depression frequently result from nitrogen mustard therapy.

Chemically related to mechlorethamine hydrochloride is triethylene melamine (2,4,6-tris[ethylenimino]-5-triazine). The average dose of the latter is 2.5 to 5 mg. orally two times a week or less, as needed. Since it can be given orally and causes less nausea and vomiting, triethylene melamine is generally considered easier to handle than its related nitrogen mustard; however, its cumulative effects may cause severe toxic reactions. In addition, patients exhibit a wide range of sensitivity to this agent.

A new agent of this group, which is reported to have a specific depressant action on granulocytes, is busulfan (1,4 dimethane sulfonoxybutane). This drug is given orally in doses up to 6 mg. daily for 4 to 6 weeks, followed by smaller maintenance doses. The only toxic effect that has been observed with larger doses is thrombocytopenia and general marrow depression. Excellent remissions marked by a feeling of well-being, decrease in spleen and liver size, rise and maintenance of hemoglobin level, and decrease in hemorrhagic manifestations have been obtained.

The antimetabolite mercaptopurine has been beneficial in the early stages of some cases that were resistant to other modes of therapy. The dosage is the same as in the acute leukemias. Evaluation of its use in this type of leukemia is incomplete at present.

Urethan (ethyl carbamate) also has been beneficial in the treatment of chronic granulocytic leukemia, but nausea and vomiting are frequent toxic manifestations. Good subjective improvement with a fall in white blood cell count has been obtained with an oral dosage of 3 gm. per day. Maintenance doses are somewhat lower, averaging 0.5 to 1.5 gm. daily.

No agent now used to treat chronic granulocytic leukemia has been proved to lengthen the actual survival time, but good hematological and clinical remissions have been obtained, and the patient's active and useful life is definitely increased. Many of the drugs used can give rise to severe hematopoietic depression unless frequent hematological examinations are done and dosage regulated accordingly.

Chronic Lymphocytic Leukemia. — Occasionally, chronic lymphocytic leukemia may run a slow and protracted course and no therapy may be necessary for years. In most patients, however, treatment is indicated. Few of the agents that are beneficial in chronic granulocytic leukemia are of equal use in the lymphocytic type. Local irradiation of affected lymph nodes often brings rapid relief of symptoms. Total body irradiation and use of radioactive phosphorus given orally also have been shown to be of benefit, but generally the hematological response is not as good as that obtained by radiation in chronic granulocytic leukemia.

Triethylene melamine is quite often effective as a chemotherapeutic agent for chronic lymphocytic leukemia, its use frequently resulting in good remissions. It should be employed with great caution, however, and the dose should be approximately one-half that used in chronic granulocytic leukemia. Administration of mechlorethamine hydrochloride also has given beneficial results, but again in fewer instances than in chronic granulocytic leukemia. The usefulness of this nitrogen mustard is further limited by the tendency of the drug, in many instances, to produce a greater destructive effect on the normal bone elements than on the leukemic lymphocytes.

The hormones may be of value in patients with associated thrombocytopenia or hemolytic anemia, probably by combating secondary hypersplenism. They are quite useless in chronic lymphocytic leukemia, in which thrombocytopenia is caused by central bone marrow failure.

Nonspecific Therapy

In addition to the specific agents described, several other measures are useful in the treatment of leukemia. Transfusions often are necessary to combat anemia, and antibiotics are needed whenever serious infection threatens the patient. Since maintenance of morale is also important, leukemic patients should be allowed to live as normally as their condition will permit.

Summary

No curative agent has been developed for leukemia, and the disease is invariably fatal; however, satisfactory remissions and prolongation of life can be achieved in a good percentage of cases, particularly in acute lymphocytic leukemia. No case of leukemia should be considered untreatable without adequate therapeutic trial.

The most satisfactory therapeutic results have been obtained in acute lymphocytic leukemias, and to a lesser degree in acute granulocytic leukemia, with the antimetabolites and the hormones corticotropin and cortisone. Mercaptopurine is occasionally beneficial in acute monocytic leukemia. X-ray and radioactive phosphorus give the best therapeutic results in chronic granulocytic leukemia, but several drugs such as busulfan and triethylene melamine occasionally induce hematological and clinical remissions.

Chronic lymphocytic leukemia is the most protracted and benign type of leukemia, but on occasion is less responsive to therapy. Remissions have been obtained with irradiation and a few of the agents beneficial in chronic granulocytic leukemia.

CURRENT STATUS OF THERAPY IN AMEBIASIS

Amebiasis, a protozoan infection caused by Endamoeba histolytica, is endemic throughout the world, but occurs with greatest frequency in tropical and subtropical areas. Although the infection is most commonly found in the intestine, it also may involve extraintestinal sites. Intestinal infection may exist merely as an asymptomatic carrier state, or it may cause symptoms varying in severity from mild or vague abdominal discomfort to severe dysentery with ulceration of the lower colon and motile amebas (trophozoites) in the stools. Invasion of other tissues may go undetected except with the development of severe or localized lesions.

The diagnosis of amebiasis is based upon the demonstration of cysts or trophozoites in the stool or in scrapings obtained by curettage. Success of the treatment is determined by the elimination of cysts and/or trophozoites from stools, healing of ulcers, and improvement of the patient subjectively. Because a large number of infections tend to remain asymptomatic, it is difficult to estimate the incidence of the disease. Two properly conducted, consecutive, negative stool examinations are usually sufficient to rule out all but the most obscure cases. Barium, bismuth subcarbonate, mineral oil, and sulfonamides interfere with the detection of amebas in the stool.

Drugs recognized for the treatment of acute or chronic intestinal amebiasis include emetine, arsenicals, iodoquinolines, and certain antimalarials and antibiotics. A mixture of emetine, bismuth, and iodine is favored in some countries for the oral treatment of subacute and chronic amebic colitis because it is less toxic than emetine alone; however, the mixture often produces severe nausea and vomiting that require simultaneous sedation and a special diet. The oral use of emetine is not desirable because there is no way to determine how much is absorbed. Ipecac is no longer employed in amebiasis. Sulfonamides or the antibiotics may be necessary to eliminate associated secondary bacterial infection that sometimes occurs in chronic intestinal amebiasis.

Emetine hydrochloride should be administered parenterally in all severe forms of amebiasis, but only to the

extent necessary to control such severe manifestations as pain, fever, and diarrhea or extraintestinal complications such as hepatic abscess. It does not cure either symptomatic or asymptomatic intestinal amebiasis. Mild forms of the disease should be treated with drugs effective in eradicating the parasite. Emetine hydrochloride is administered by deep subcutaneous injection. The usual dose for adults is 60 mg. per day, usually for 4 to 6 days and never for more than 10 days. As soon as severe manifestations are controlled, emetine therapy should be replaced by orally effective drugs to eradicate infection. Emetine may cause gastrointestinal disturbances, neuromuscular weakness, dyspnea, and myocardial damage as shown by electrocardiographic changes. It is contraindicated in patients with organic heart disease and kidney disease and in the aged.

The amebacidal arsenicals are indicated in the acute and chronic intestinal form of the disease in the following oral dosages for adults: acetarsone, 0.25 gm. three times daily for one week; arsthinol, 0.25 gm. three times daily for 5 days; carbarsone, 0.25 gm. twice daily for 10 days; glycobiarsol, 0.5 gm. three times daily for one week; thiocarbarsone, 50 to 100 mg. three times daily for 10 days.

Administration of arsenicals involves the potential hazard of arsenic intoxication with resulting gastrointestinal symptoms and cutaneous disturbances. They are usually regarded as contraindicated in the presence of liver involvement or kidney damage.

The iodoquinolines also are useful in both acute and chronic intestinal amebiasis in the following oral dosages for adults: chiniofon, 0.75 to 1 gm. three times daily with meals for 7 to 14 days; diiodohydroxyquin, 0.65 gm. three times daily for 20 days; iodochlorhydroxyquin, 0.25 gm. three times daily for 10 days.

When iodine derivatives are used the possibility of iodism must not be overlooked; these derivatives are contraindicated in patients sensitive to iodine.

Chloroquine phosphate, an antimalarial, also acts as an amebacide and is effective in eradicating apparent and unapparent extraintestinal infection. It is not effective against intestinal infection. Amodiaquin hydrochloride, the antimalarial equivalent of chloroquine, has not been established for use in extraintestinal amebiasis. For this purpose chloroquine phosphate is administered orally in an average dosage for adults of 0.5 gm. twice daily for two days followed by a single dose of 0.5 gm. daily for 2 to 3 weeks. This dosage may also be given in conjunction with intestinal amebacides to eradicate extraintestinal involvement. Some authorities believe that chloroquine is routinely indicated because of the likelihood that intestinal infection is associated with early invasion of extraintestinal sites. The drug may produce side-effects such as headache, pruritus, and gastrointestinal, visual, and psychic disturbances. The psychic disturbances may interfere with the safety of operation of machines and vehicles.

Antibiotics useful for the treatment of amebiasis include bacitracin, carbomycin, chlortetracycline hydrochloride, oxytetracycline hydrochloride, and fumagillin. Although bacitracin may be somewhat less effective, it is the least toxic of the antibiotics proposed for this purpose. Carbomycin has not been established as an amebacide; the tetracyclines are not directly amebacidal but are fairly well established as potentially curative, apparently by eliminating intestinal bacteria upon which the amebic parasite is dependent. The usual oral dosage of these drugs for adults is as follows: bacitracin, 80,000 units daily for 10 to 14 days; carbomycin, 2 gm. daily in divided doses every 6 hours; chlortetracycline, 1 to 2 gm. daily for 10 days; fumagillin, 30 to 60 mg. daily in divided doses for 10 to 14 days; oxytetracycline, 2 gm. daily for 10 days.

Side-effects from therapy with broad-spectrum antibiotics include diarrhea, monilial colitis, and proctitis. Desquamation and sensory disturbances of the palms and soles have occurred rarely with fumagillin.

Relapses may occur after the use of any of the agents currently employed for controlling amebiasis, indicating that a universally effective drug is not yet available. Repeated courses of therapy with the same or a different drug may be necessary in order to combat recurrence of symptoms and eliminate E. histolytica from the stool. Rest periods of 7 to 10 days or more in which no drug is given should intervene between alternating or repeated courses of therapy to avoid cumulative toxic effects. Close supervision and adjustments in dosage are essential to control side-effects during therapy.

Surgical drainage may be necessary in cases complicated by hepatic or lung abscesses and particularly in those instances involving an abscess of the brain. When such surgical intervention is indicated by failure of response to various chemotherapeutic agents, the operation should be preceded by treatment with amebacides and antibiotics to reduce the possibility of complications.

Parent-Child Relationship.—Psychiatrists are not now, nor are they ever likely to be, available in sufficient number to handle the bulk of the interpersonal problems that arise in the course of our complex and rapidly changing civilization. The psychiatrist's role is, and should be, limited to those problems of sufficient severity to require time, effort, and specialized knowledge beyond the limitations imposed by the demands of general practice. What is required, above all, to help troubled children and their parents is sincere interest and a willingness to listen; a faith in the ability of most people, given a chance, to work out their own solutions, and reasonable confidence, without arrogance, in one's own judgment. These fundamental attributes are enhanced and made more useful by the acquisition of specialized knowledge incorporating the wisdom of broad experience and conceptual clarity. The scope of the problem of mental illness demands that the family physician attend to it as zealously as he does to other endemic and epidemic ills. The practice of medicine must be geared to the treatment of the "compleat patient"; the one "compleat physician" capable of assuming this responsibility is the family physician.—Leon Eisenberg, M.D., The Parent-Child Relationship and the Physician, *A. M. A. Journal of the Diseases of Children*, February, 1956.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
Edited Under the Direction of the Board of Trustees
Editor and Managing Publisher . . AUSTIN SMITH, M.D.
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Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . . "Medic, Chicago"

ELECTROENCEPHALOGRAPHY'S PROPER ROLE

GUEST EDITORIAL

Paul C. Bucy, M.D.

In these days of "mechanical brains" it is not surprising that our yearning continues for diagnostic machines that will replace the labor ordinarily associated with the solution of a difficult neurological problem. However, the most competent clinicians have always advised against too great a reliance on laboratory and mechanical diagnostic aids—and such advice is still sound. In 1929, Berger demonstrated that small changes in electrical potential can be picked up from various parts of the scalp. When suitably amplified these can be recorded, producing a wave-like pattern on a continuous record. This is known as an electroencephalogram. At first this attracted little attention, but in the past 20 years electroencephalography has come more and more to the fore. Societies and journals devoted to this subject have been founded. However, this technical method, which is of value both in clinical neurology and in research, now finds its reputation threatened as a result of its misuse and of unwarranted enthusiasm. Fortunately, the past 20 years of experience have provided considerable opportunity for the proper evaluation of electroencephalography.

It is now clear that, in the main, allowing for certain extraneous influences that are usually readily recognized, the changes of electrical potential between different points on the scalp that the electroencephalogram represents result from alterations in electrical and thus physiological activity within the brain. It is obvious, of course, that recordings made from 8, 16, or even 32 electrodes cannot supply information from each of the millions of individual nerve cells or even the many groups of nerve cells within the brain. The alterations that are recorded are only the summation of the multifold activity within the brain. The electrocardiogram is, of course, a summation of the electrical activity of the many muscle fibers within the heart; however, as the heart's action is normally rhythmical and as the muscle fibers of any one unit, such as an auricle or a ventricle, normally function synchronously, the electrocardiogram produces a constant wave pattern practically identical from time to time and from person to person, and certain disease processes produce typical electrical alterations of considerable diagnostic significance. Even so, it is no secret that the electrocardiogram is incapable of demonstrating many cardiac abnormalities and is a diagnostic tool that should be used only by a competent cardiologist as an aid and in conjunction with a good history and a thorough examination. The limitations on electroencephalography are even more severe. Because the actions of the various parts and cells of the brain are most diverse and inconstant, the electroencephalogram lacks the rhythmical uniformity of the electrocardiogram, even though there is a tendency to a basic rhythm, usually of 8 to 10 waves per second. The electroencephalogram commonly varies from patient to patient and from time to time in the same patient. The electroencephalogram varies in the same person from one age to another; it also varies between the sleeping and the waking state and depending upon whether the eyes are open or closed. With years of experience it has become apparent that certain wave patterns are found most often in normal healthy people, while others are seen most commonly with disease. However, it is a fact that 5 to 10% of apparently normal healthy people have electroencephalograms that are "abnormal." It is also a fact that patients, particularly adults, may suffer from epilepsy or convulsions and have perfectly normal electroencephalograms and that people may harbor brain tumors or suffer from subdural hematomas or subarachnoid hemorrhages and have a "normal" electroencephalogram. The electroencephalogram is often normal over an area from which the brain has been removed. The electroencephalogram is commonly normal in patients in whose brain main fiber tracts have been severed, as in a frontal lobotomy. The electroencephalogram usually does not indicate the presence within the brain of a cystic cavity that is not under tension.

On the other hand, the electroencephalogram may reveal valuable clues as to the presence of a supratentorial brain tumor. It is usually abnormal in the presence of epilepsy, especially in childhood. It commonly has a typical wave pattern in association with petit mal epileptic seizures and with psychomotor or temporal lobe epilepsy. It is absolutely indispensable in localizing the affected side in those cases of psychomotor epilepsy that require surgical treatment, although even here its testimony may be equivocal. It usually presents a picture of severe and diffuse abnormality in cases of encephalitis, and it may be of value in following the course of this disease.

However, the electroencephalograph is not, independently, a trustworthy diagnostic instrument. No one, by this means alone, can make a satisfactory diagnosis

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of epilepsy, a brain tumor, or a traumatic injury of the brain. The electroencephalogram by itself is also inadequate evidence on which to base treatment or to render a medicolegal opinion. It is a matter of common experience that the information gained from electroencephalographic tracings may be grossly misleading and that great care must be exercised in correlating such records with all other clinical and laboratory data and in evaluating the electroencephalograms accordingly.

Electroencephalography is a valuable tool, particularly in the research laboratory. When used clinically, the evidence it provides should be properly evaluated and considered together with the clinical history, the neurological and general physical examinations, appropriate roentgenograms, examinations of the blood and spinal fluid, and other special tests, such as audiograms, vestibular tests, tests of visual fields, and electromyograms, that may be indicated. We have not yet achieved "push-button" medicine, and the electroencephalograph is not neurology's "diagnostic machine."

PARENTERAL ADMINISTRATION OF DRUGS

The parenteral administration of medicaments has become universally popular since the hypodermic syringe was introduced in medical practice more than a century ago. While hypodermic injection provides an effective means for therapy that cannot be given orally, it is a procedure that has certain limitations due to the narrow tolerance of the tissues.

Drugs for parenteral use are kept in containers in a sterile condition or are sterilized just before they are used, depending partly on the nature of the drug and partly on available facilities. In sterile form they are contained in single-dose glass ampuls or in multiple-dose vials with a rubber closure. The most convenient form is a sterile solution of the drug in a form ready for withdrawal into the syringe, but, since useful drugs vary in solubility, present-day preparations vary from the most desirable isotonic aqueous solutions to various extremes of aqueous solutions, suspensions, and solutions in oil or other vehicles. Drugs that are not stable in solution may be supplied in dry form in vials or ampuls, to which a suitable solvent is added just before using. Some solutions administered parenterally are quite stable and may be mixed with others just before injection, but many are not, as their specialized solvents required for stability in solution may preclude admixture with other preparations.

Occasionally unexpected local or systemic reactions occur after the administration of preparations parenterally. Some such difficulties may be due to the preparation itself and some to faulty technique of its administration. In general, United States pharmaceutical firms that market injectable preparations have remarkably high standards and the preparations are excellent. Nevertheless, many useful and well-prepared drugs given parenterally may tend to provoke minimal or marginally acceptable degrees of local or systemic reaction because of their unavoidably undesirable properties, such as the vehicle or the pH, or because the substance is a microcrystalline suspension.

Keeping in mind these desirable and undesirable properties of parenterally administered drugs, it is clear that in the present day the technical details of making an injection, as carried out by the nurse or the physician, are highly important. Errors in technique may lead to serious consequences. Frequently, the tendency is to blame the product that was injected rather than to point a finger of suspicion at the shortcomings of the technique of the hypodermic administration.

Everyone recognizes that the pharmaceutical manufacturers have a responsibility to the medical profession and to the public to manufacture and supply drugs of high quality, and free from infection or pyrogens. On the other hand, physicians have an equal responsibility to their patients to administer the preparations in accordance with safe, well-established techniques. In this connection, there are certain common errors that are unintentionally committed. Some of these are failure to remove traces of oil or blood from syringes and needles after use, the introduction of pyrogens or other contamination via sterilizer fluid or water into a multiple-dose vial at the time of withdrawal of a dose, and the mixing of two medicaments in one syringe with the intention of avoiding two injections in the patient but thereby also unintentionally introducing an undesirable drug into one of the vials. (A serious and otherwise inexplicable sensitivity reaction could thus be produced subsequently in a patient who is sensitive to a contaminant such as penicillin.) One who handles the equipment used for making hypodermic injections should remember that so-called sterilization alone is not sufficient to insure safety of an injection but should always recall that foreign material inadvertently introduced into a multiple-dose vial may produce on subsequent injections bizarre and sometimes serious local or systemic disturbances.

A discussion of technique of injections would not be complete without reemphasizing the fact that the virus of infectious hepatitis, which may be transmitted by syringe and needle and in turn could be introduced into a multiple-dose vial, is destroyed only by considerable amounts of heat; for example, 30 minutes of boiling in water. The time, pressure, and temperature required for adequate steam and dry sterilization also are important if these methods are used for sterilization. It is well, therefore, for the physician once in a while to impress these details of his office practice on his associates, especially if a warning sign of undesired local or systemic reaction has occurred after a hypodermic injection.

ORGANIZATION SECTION

VOLUNTARY PENSION PLANS FOR SELF-EMPLOYED PERSONS

The following explanation of the Jenkins-Keogh bills was prepared by Congressman Eugene J. Keogh primarily for the purpose of assisting members of the House and Senate in answering an ever-increasing volume of correspondence from constituents. It covers the amendments of July 18, 1955. This amended bill was made a part of the omnibus tax bill that has not yet been reported out by the House Committee on Ways and Means.—ED.

Purpose.—Under present law certain tax advantages are extended to participants in qualified employee pension and profit sharing plans. These tax advantages include postponement of the tax that otherwise would be payable by the individual beneficiary on annual contributions to the plan until the pension benefits are paid out, a similar postponement of tax on the interest earned on funds held for the plan in trust, and capital gains treatment on certain lump sum distributions under the plan. The provisions dealing with employee pension and profit sharing plans were thought desirable as a means of encouraging private provision for the cost of old age, thereby relieving the federal, state, and local government of much of this responsibility.

This bill corrects what in the opinion of its proponents amounts to a serious inequity created by the fact that the large group of self-employed persons are foreclosed under present law from establishing retirement savings programs that will permit them to enjoy the same tax advantages that are extended to employees under qualified plans established by their employer.

Qualified Persons.—The benefits of this bill are extended to all persons who are subject under the Social Security Act to the tax on self-employment income; in addition several categories of persons who are exempted from the tax on self-employment income and not now covered by the social security program will receive benefits from the bill. These additional categories include physicians, lawyers, dentists, osteopaths, veterinarians, chiropractors, naturopaths, optometrists, Christian Science practitioners, ministers of a church, and members of a religious order. A person who is self-employed and who also is an employee covered by a qualified employer plan or a government retirement plan may still be covered if more than 75% of his earned net income is derived from self-employment.

Eligible Pension Funds.—The bill provides a limited deduction for contributions into certain specific types of retirement savings programs. These include restricted retirement funds established for the exclusive benefit of participants in which the contributions are held in a trust, custodian accounts, and restricted retirement life insurance or annuity contracts.

In the case of restricted retirement trust funds and custodian accounts the following conditions must be met. 1. Participant rights must be nonassignable except for permission to designate a beneficiary or to elect a joint and survivor annuity with a dependent or spouse. 2. The trustee or custodian must be a bank, and investments by the trustee or custodian must be controlled by trust indenture and local law except that the trustee or custodian may purchase a restricted annuity contract. 3. Except for the total and permanent disability of the beneficiary, there can be no distribution of interests to participants before age 65. Distribution thereafter can be in any form. In the case of a restricted retirement life insurance or annuity contract the contract must be purchased from an insurance company and it must meet the conditions described in 1 and 3 above.

Limitations on the Amount of Income Tax Deductions for Payments to Eligible Pension Funds.—The annual contribution to a pension fund for which the self-employed individual may take a tax deduction is limited to 10% of his earned income or $5,000 a year, whichever is less, but the aggregate deduction during the individual's lifetime cannot exceed $100,000. The bill provides a carryover feature to take care of the situation where the individual does not invest up to the above limitation in a particular year. In this case a deduction may be taken in the current year for contributions in excess of 10% of earned income up to a limit of $5,000. However, a carryover from a particular year must be used within one of the five succeeding years.

A special rule is provided for taxpayers who are beyond the age of 55 on the effective date of the bill. The limitation on their annual exclusion is raised by 1% of earned income, or $500, for each year by which the taxpayer's age exceeds 55 on the effective date, except that the increase shall not be credited for more than 20 years. This rule works in the following way. A taxpayer who is age 65 when the bill becomes effective may increase his annual limitation by 10 percentage points or by 10 times $500, so that he can deduct for tax purposes in each year up to 20% of his earned income, or $10,000, whichever is less, if he makes that large a payment into an eligible pension fund. If the taxpayer is age 75, the limitations would be raised to 30%, or $15,000, whichever is the lesser. The limitation does not extend beyond this point even though the taxpayer is over 75.

The definition of earned income used in the application of these limitations corresponds to the definition of self-employment income that is used in calculating the social security tax on self-employment income except, of course, the income of the specially included categories, such as ministers and physicians, is included for this purpose. In the case of contributions made by a self-employed individual to a restricted retirement insurance contract providing both life insurance and annuity benefits, the portion of the contributions properly allocable to life insurance benefits as distinguished from the equity acquired is not allowed as a deduction.

Treatment of Distributions.—Amounts distributed from a restricted retirement fund, except in a lump sum, shall be taxable as an annuity with the investment in the contract limited to contributions that have not previously been deducted from gross income. Thus, any deduction from taxable incomes on account of a distribution is limited to contributions for which no tax benefit was previously received. If the taxpayer has been able to deduct all his contributions, then the whole of each annuity payment must be included in gross income.

Amounts received by the estate or beneficiary of the taxpayer from an insurance contract qualifying as a fund will be includable in the decedent's gross estate for tax purposes, but benefits, other than life insurance benefits, will be taxable as income to the estate or beneficiary. If the entire amount in the restricted retirement fund is distributed in a lump sum it will be taxable as a long-term capital gain but only if the fund has accumulated over a period greater than five years.

Miscellaneous Provisions.—Contributions made to an eligible fund within 60 days of the close of the year may be treated as payments made in the prior year. This is designed to deal with the problem faced by self-employed persons who might not know their exact income at the end of the taxable year and thus would not know precisely how large a deduction would meet the 10% test.

MENTAL ILLNESS IN ALASKA

The following letter has been forwarded to the Committee on Interior and Insular Affairs, United States Senate, from the American Medical Association.—ED.

Honorable James E. Murray, Chairman
Committee on Interior and Insular Affairs
United States Senate
Washington 25, D. C.
Dear Mr. Chairman:

I am writing in further reference to your recent request for the views of the American Medical Association on H. R. 6376, 84th Congress, a bill to provide for the hospitalization and care of the mentally ill of Alaska. Our Committee on Legislation has now considered this measure, and the Executive Committee of the Board of Trustees has adopted a position on the bill. With the reservations hereinafter discussed, the American Medical Association supports and recommends the enactment of H. R. 6376, 84th Congress.

Three studies of the situation of the mentally ill in Alaska have been made in recent years. The earliest of these, in 1948, was conducted by the American Medical Association. The report of the group of physicians which visited Alaska in the course of this investigation was critical of the existing commitment procedures and the lack of facilities in Alaska for the care and treatment of mental patients. It recommended the establishment of a centrally located hospital to provide for the needs of the Territory. Accordingly, the American Medical Association supports H. R. 6376 insofar as that bill modernizes existing archaic commitment procedures and provides for the establishment of adequate local facilities for the care and treatment of the mentally ill of Alaska.

With respect to commitment procedures, I should point out that a very difficult medico-legal problem is involved in the enactment and administration of any commitment procedure. From a medical point of view, it is desirable to institute a course of therapy as early as possible and with the least possible disturbance to the patient. From a legal point of view, it is essential that the civil rights of persons alleged to be mentally incompetent be fully protected. This variation in approach to the problem must be considered in connection with the pending bill as in all commitment acts, but in our opinion, the procedures set forth in H. R. 6376 are on a par with the better procedures adopted by the several states, and are superior to those presently followed in Alaska. However, since the American Medical Association does not presume to speak with authority on the legal aspects of commitment, it may be desirable for your committee to obtain and consider the recommendations of a legal organization, such as the American Bar Association.

A widespread misconception of the purpose and effect of Section 119 of the measure exists. As we understand its provisions, this section is an authorization for the transfer of residents of Alaska or of other jurisdictions back to their jurisdiction of residence for treatment when they are adjudged mentally incompetent elsewhere. Such a provision is common between the several states today. Section 119(c), providing for the reciprocal assumption of expenses for the care and treatment of the mentally ill in those cases where transfer to their jurisdiction of residence is not accomplished, seems to have been widely misunderstood. In view of this fact, we recommend the insertion of clarifying language.

It is our understanding that the original bill contained a section providing for criminal penalties for wilfully causing, or conspiring with, or assisting another to cause the unwarranted hospitalization of any individual, or for the denial to any individual of any rights granted him under the provisions of the measure. While we recognize that the existence of such a penal provision might impede the discovery and hospitalization of some persons who are mentally ill, we feel, in balance, that it is a desirable safeguard in a measure of this nature. Accordingly, we recommend that a similar safeguard be incorporated in the measure by your Committee.

I am pleased to have had the opportunity of presenting the views of the American Medical Association on this measure. If we may be of any further assistance to the Committee, it is our sincere desire to do so.

Respectfully yours,
GEORGE F. LULL
Secretary and General Manager

NEW A. M. A. PUBLICATIONS

Grievance Committees. The Board of Trustees set up a special *ad hoc* committee to review the entire grievance committee situation and to develop guides for committees set up by medical societies to handle complaints from patients against individual physicians. This 15-page pamphlet contains the findings and recommendations of the special committee created by the Board of Trustees.

MEDICAL NEWS COVERAGE IN SAN FRANCISCO

In the February 25 and March 3 issues of THE JOURNAL *there appeared a two-part report of a study made by Dr. Harry Wilmer concerning medical news in the lay press in the San Francisco area. Dr. Wilmer, who submitted his article unsolicited, was the Chairman of the Public Relations Committee of the San Mateo County Medical Society. In submitting his article to* THE JOURNAL, *Dr. Wilmer stated that it was written on the basis of a six-months' study of "press releases in the San Francisco area." Subsequent to the publication, as the letters appearing immediately below disclose,* THE JOURNAL *learned that Dr. Wilmer's survey was based on inaccurate and inadequate information.* THE JOURNAL *had no intention of printing other than the true facts about a very important problem—medical news reporting. It regrets the incident but is confident that all the newspapers involved will continue their practice of prominently reporting the important and news-worthy activities of medicine.*—ED.

To the Editor: I direct your attention to articles by H. A. Wilmer, M.D., Ph.D., in the February 25 and March 3 issues of THE JOURNAL of the American Medical Association, containing false information of a damaging nature to the San Francisco *Call-Bulletin*, its editors and staff.

In two articles, "Facts and Feelings About Newspaper Medical Coverage," Dr. Wilmer presents what purports to be a study of coverage of medical subjects by newspapers of the San Francisco Bay Area during a seven-month (February-September) period of 1954.

He writes that the Public Relations Committee of the San Mateo County (California) Medical Society employed a professional news-clipping bureau to furnish all news stories in which a physician's name appeared. Later in the article, he presents tables and charts purporting to show exactly how many inches of space were devoted to "all medical news" by each of the twelve newspapers of the area, including all four San Francisco dailies.

Dr. Wilmer's article in THE JOURNAL gives these figures for the newspapers of this city:

The Chronicle	1,858	inches
The News	181	"
The Examiner	160	"
The Call-Bulletin	22	"

And he makes this observation:

"There is a striking range (22 to 1,858 in.), showing that medicine is not considered equally newsworthy by all papers. The San Francisco *Chronicle* accounts for nearly 85% of the medical copy in that city, which has four newspapers of over 100,000 circulation."

We have accurately measured the space devoted to medical coverage by *The Call-Bulletin* during the period in question. Instead of the 22 inches Dr. Wilmer reports, this newspaper actually published 3,006 column inches.

This total does NOT include the hundreds upon hundreds of inches of space devoted to photographs and captions in connection with medical coverage. Because Dr. Wilmer's report did not indicate whether or not he counted the space occupied by illustrations, we chose to omit it from our compilation.

The fact that a single column is approximately 20 inches deep—and that we carried many individual stories greatly in excess of one column in length—makes Dr. Wilmer's statement ridiculous. His multiple references to the 22-inch figure (in text, table and chart) eliminate "typographical error" as a possible and charitable explanation.

Dr. Wilmer's report left somewhat obscure whether all his compilations were based on merely those stories mentioning the name of a physician. But even if that were the case, it would not explain his amazing figures. Just one representative envelope of medical subject clippings from *The Call-Bulletin* library, for example, showed: Out of 286 column inches of medical copy contained in it, stories totalling only 51 column inches did NOT contain any doctors' names.

Dr. Wilmer makes a point in his text that one newspaper, *The Chronicle*, carried 85 per cent of all the medical copy published in San Francisco during the period, with a total of 1,858 inches. All four dailies of this city, his table purports to show, carried a total of 2,221 inches. Yet the fact is that, exclusive of pictures, *The Call-Bulletin* alone published more than 3,000 inches—the equivalent of about nineteen full pages devoted to medical coverage!

The Call-Bulletin not only is keenly proud of its news coverage reputation and the numerous professional awards bestowed upon the publication and its staff of high caliber reporters, but we have taken particular pride in our coverage and presentation of medical subjects. In this, we have enjoyed the confidence and cooperation of many of the most able men of medicine. The fact that numerous of these doctors and dozens of professional and supporting medical organizations have written us to comment on the able handling by our reporters is a source of considerable pride for all of us on *The Call-Bulletin*.

JACK S. MCDOWELL
City Editor
The Call-Bulletin.

To the Editor: In the February 25, 1956 issue of THE JOURNAL there appears the first installment of an article by H. A. Wilmer, M.D., Ph.D., of Menlo Park, California. That article contained statistical tables purporting to show the number of inches of medical news in certain categories published by the various newspapers of San Francisco and vicinity and the percentages of medical news in those categories published by each newspaper.

The tables as published in THE JOURNAL show the San Francisco *Chronicle* leading in medical news coverage during the specified period with publication of 1,858 inches of medical news, which according to THE JOURNAL tables would be 31.5% of all such medical news pub-

lished by the twelve newspapers listed. The same tables show the San Francisco *Examiner* with 160 inches of medical news coverage and only 2.7% of the total medical news printed in the area. I have no means of gauging the accuracy of the tables as they concern the number of inches of medical news printed by other newspapers.

However, the figures concerning *The Examiner* were so wrong on their face that we have made a careful measurement of our own files for the period covered by THE JOURNAL article, following exactly the categories set up by Dr. Wilmer.

We find that instead of printing 160 inches of medical news during that period, as stated in Dr. Wilmer's article, we actually printed 13,100 inches. If Dr. Wilmer's figures for other newspapers were correct, this would mean *The Examiner* had printed 69.51% of all the medical news coverage in the area. We concede that his figures are off for all newspapers but probably *The Examiner*, with much the largest circulation in this area, has been done the greatest injustice.

If Dr. Wilmer, or any of the persons to whom he submitted the article, or the American Medical Association JOURNAL editors themselves had given the statistical tables any thought, they would have realized that they must be erroneous inasmuch as the American Medical Association convention was held here during the period treated by Dr. Wilmer, which was between February and September, 1954. *The Examiner* devoted many times more space to that convention alone than the 160 inches with which we are credited in THE JOURNAL and, I repeat, every statement I make takes into consideration the categories of medical news set up by Dr. Wilmer.

We are especially disturbed because of the great effort we have made to provide the fullest possible coverage for ethical medical news. We have sought, and I am certain that we have achieved leadership in this field in our area. THE JOURNAL article has damaged us greatly and would lead many physicians to believe that not only our own morning opposition paper but a number of comparatively small town papers in the area print far more medical news than the San Francisco *Examiner*.

By publication of these grotesquely false figures there has been injured not only the San Francisco *Examiner* but also its principal science writer, John F. Allen. His own writings, which fall within the Wilmer categories, were about 1,600 inches or more than ten times the total amount credited to the entire newspaper.

WM. C. WREN
Managing Editor
San Francisco Examiner.

To the Editor: The Feb. 25 issue of THE JOURNAL contains an article by Dr. Harry Wilmer of Menlo Park purporting to be an objective analysis of how San Francisco Bay Area newspapers cover medical news. I regret to tell you it is no such thing.

The only really incontrovertible statement in Dr. Wilmer's piece is his conclusion—"the amount of medical news varies greatly from paper to paper."

So soon, however, as he begins to apply this truism to specific newspapers, he leaves safe ground. He says, for example, that "*The San Francisco Chronicle* accounts for nearly 85% of the medical copy in that city."

This is false. The diagram he supplies to support this statement is based on pure fancy and nothing else. It credits *The News*, for example, with publishing 181 inches of medical news during the period from February to September, 1954.

Even adopting Dr. Wilmer's dubious criterion—that the story must contain the name of a physician to qualify as medical news—this figure is less than 7 per cent of the medical news actually carried by *The News* during that period.

A hasty and by no means complete check of our files shows we carried not less than 2,800 inches of medical news from February to September, 1954—and this does not include any personal news about physicians—marriages, divorces, promotions, honors and awards, arrests, and so on.

Nor does it include the uncounted hundreds of inches of quite obvious medical news which happened not to name a specific physician.

We carried nearly 500 inches about cancer alone; 348 about poliomyelitis; 206 about drugs and pharmacology; 108 about psychiatry.

During the period under study the American Medical Association met here in San Francisco. Your public relations staff could have told you that *The News* carried more than 400 inches of news about the convention, again including only those stories in which a specific physician was named.

FRANK R. FORD
Editor
The San Francisco News.

To the Editor: I have seen and studied letters from the San Francisco *Examiner*, the San Francisco *Call-Bulletin* and the San Francisco *News* relative to my article "Facts and Feelings About Medical Newspaper Coverage" appearing in the American Medical Association JOURNAL on February 25 and March 3.

I have had an opportunity to talk with men who represent these newspapers and have had an opportunity to see some of the clippings to which the newspapers have reference.

It should be pointed out that the criteria for selection of the clippings mentioned in my article was that the article should be medical news in which a physician's name is used, or other prominent news in which a physician's name appeared which would in effect from a public relations point of view make it medical profession news. It was clearly stated in my article that it was unknown to me how many articles were missed by the clipping bureau, the source of my news items. All clippings were mailed from this bureau to the Medical Society office and remailed to me. I collected them until there were just over 1,000 articles which seemed to me to be an adequate sample.

It has been brought to my attention, however, that this sample does not include all the articles written in these various papers, even using the criteria I had set up, and that consequently the data in Table 1 of Part 1 should only be viewed as to the breakdown of the particular sample supplied me. And I will hasten to add that this sample does not include full and representative relative data. For example the San Francisco *Call-Bulletin* tells me that rather than 22 inches of medical coverage they published 3,006 column inches. The San Francisco *News* tells me that an incomplete check reveals that rather than 181 inches they published in excess of 2,800 column inches. The San Francisco *Examiner* states it published not 160 inches but 13,100 inches; I have no way of checking how much of this large volume did not fall into the criteria which I have set up, but this is not the point which has disturbed the newspapers. Instead, it is the fear that an erroneous impression has been given that these three newspapers do not give adequate quantity of medical newspaper coverage. This impression is wrong. Not only do all three of these papers give considerably more space than I mentioned to medical affairs (which would be their criteria and include all medical news) but also they gave a great deal of space to articles in which doctors names were featured (which was my criteria). If there is an error it lies in the sample which I obtained for study. It should be stated that the important part of this study is that certain conclusions were reached which were highly favorable to newspapers and indicate that we are approaching an even more friendly and cooperative time in medical-press relationships. The sample was large enough to formulate such conclusions but not representative of each newspaper's total contribution in the time of this study. The study was not to compare newspapers with each other but merely to report on their current good reporting in this area at this time.

HARRY A. WILMER, M.D.

Cardiac Disability.—Myocardial ischemia, ischemia necrosis, and infarction, which are the underlying causes of the clinical manifestations of the acute phase of coronary artery disease, are not due solely to coronary thrombosis. They may result from other acute occlusive processes or from acute functional disparity between the demand and the supply of the blood to the heart muscle. Emotional and/or physical strain are potent factors in the production of the acute phase of the disease. . . . The strain must not necessarily be unusual provided it is great enough and has been undertaken at a vulnerable phase of the disease. The symptoms following the strain must not necessarily be severe soon after, but must be continuous and followed within a reasonable time by evidence of structural myocardial damage. If there was pre-existing cardiac disease, evidence of fresh myocardial injury must be demonstrable soon after the strain. Physically non-strenuous work if performed under emotional excitement or upset may precipitate an attack. Death may occur soon after a given strain, and in the absence of demonstrable acute coronary occlusion at autopsy is to be attributable to an acute myocardial ischemia due to functional coronary insufficiency especially where coronary atheromatosis is marked. Delayed death of several years following an acute cardiac insult may be due to such insult if autopsy findings reveal an extension at the original site of injury, and there are no other acute pathologic findings to account for death.—L. H. Sigler, M.D., The Evaluation of Claims for Workmen's Compensation in Cardiac Disability and Death, *Industrial Medicine and Surgery*, January, 1956.

MEDICINE AND THE LAW

THE TISSUE COMMITTEE

Hospitals desiring accreditation by the Joint Commission on Accreditation of Hospitals are required to meet certain criteria, one of which is the appointment and maintenance of a tissue committee,[1] which has the following functions:

> The Tissue Committee shall study and report to the staff, or the Executive Committee of the staff, the agreement or disagreement between preoperative diagnoses and reports by the pathologists on the tissues removed at operation. The Committee shall meet at least once a month and submit to the Executive Committee a report in writing to be made a part of the permanent record.

As has been pointed out by both Dr. MacEachern [2] and Dr. Ponton,[3] the medical staff of a hospital has an obligation to the patients entering that hospital to see to it that everything possible is done to insure that the professional services rendered will be at least equal to average standards. To fulfill this obligation, considerable reliance must be placed upon the professional accounting methods used in the hospital. Certainly one of the most valuable of these methods is the tissue committee. (Some hospitals refer to the committee functioning in this capacity as the audit committee, surgical review committee, tumor and tissue committee, or the like.)

In recent months, a number of hospital administrators and committee members have expressed concern as to the possible use and abuse of tissue committee reports by attorneys seeking material on which to base a malpractice action or seeking potential expert witnesses to support a suit already filed or contemplated. Questions such as the following have been asked: Are tissue committee reports available to attorneys in any way? May they be subpoenaed? May they be examined in pretrial discovery proceedings? Are they admissible in evidence? May they be used on the cross examination of a committee member who is testifying as an expert? Are they, in fact, of any probative value on the issue of the negligence of a surgeon whose cases may have been considered by the committee? These are pertinent questions. They are also difficult questions to answer because the law gives due consideration not only to the protection of physicians from unjust claims but also to the protection of patients having just and meritorious claims. Before attempting to answer these questions, however, it will be helpful to review the usual make-up, activity, and goals of a tissue committee.

A tissue committee is a committee of the medical staff of a hospital, or a subcommittee of the executive committee of the medical staff, and is usually appointed by the president of the medical staff pursuant to the bylaws of the hospital.[4] At the time of its organization, the committee decides what types of cases are to be reviewed, how the review is to be performed, and what limitations, if any, are to be placed upon the committee.

In one instance, for example,[5] a committee decided to review all operative cases in the following six categories: (1) operations involving reproductive organs; (2) appendectomies; (3) cases in which the pathologist reported no, or minimum, pathological changes; (4) cases in which there was marked disparity between preoperative and postoperative diagnoses; (5) emergency surgery, including not only the operations performed at night and over week ends but also all surgical cases admitted other than during the regular hours, 2 p. m. to 5 p. m.; (6) cases in which tissue was not removed, as in lysis of adhesions, uterine suspensions, and cases in which the incision was closed without consummation of definite surgery. Cases falling within these categories are sent to the committee chairman, who assigns the various charts to the committee members. Members do not review their own charts or those of their associate's patients. The committee meets monthly, or as often as may be necessary. Cases are presented by number only so that the identity of an individual patient and surgeon is not disclosed. The conclusion of the committee in each case is made a part of the permanent files of the medical staff. These conclusions may, of course, take various forms, but in most instances they will be tabular rather than narrative and will state only the finding and not the facts upon which the finding is based.

In some institutions a report form [6] is used, showing a further analysis in each case and indicating whether surgery was justified and whether the preoperative and the tissue diagnosis agreed. Each report indicates the case number, the surgeon's number, and the final diagnosis on operation. Such a form, tabulated for any particular period of time, will disclose (1) the number of times a specific type of operation is performed by all surgeons, (2) the number of times a specific type of operation is performed by an individual surgeon, (3) the total number of operations performed by all surgeons, and (4) the total number of operations performed by an individual surgeon. The form also reveals the number of justified surgical procedures, the number of operations in which tissue was removed justifiably, the number of operations in which normal tissue was removed, and the number of operations in which a correct preoperative diagnosis was made.

In attempting to evaluate surgical procedures, the average tissue committee studies each patient's clinical record, history, physical examination, laboratory data, diagnostic tests, operative findings, follow-up notes, and discharge notes. In this way the tissue committee is able to evaluate the justification for surgery performed by the members of the medical staff of the hospital as well as the quality of surgical care furnished to patients. The discovery of negligence is neither the goal nor an indirect result of a tissue committee study. It should be understood that the word "justification" is used in a medical sense and not in a legal sense.

Furthermore, tissue committee reports, as such, contain no factual information, such as is found in the patient's hospital record. As Dr. Ponton [7] points out:

> The purpose of all staff meetings is lost sight of when there is an attempt to throw blame on any individual. The medical staff is looking for sources of error which may have occurred and only incidentally will it discover who made the error. When emphasis is placed on a person who made the error rather than on the error itself, ill feeling results and consequently there can be no effective effort at correction.

What then is the legal status of this committee report or of the index of the activities of an individual physician that it provides? Immediately, two entirely different questions are presented. Are the records of a tissue committee subject to subpoena or pretrial inspection, and are they admissible in evidence in a lawsuit? For the purpose of this discussion, it will be conceded that, upon compliance with the pertinent statutes and court rules of the state in question, such records may usually be subpoenaed. To what use they may be put once they appear in the courtroom will depend upon the type of case being tried. If it is a suit against a hospital for failing to use due care in the appointment or retention of a staff physician, the tissue committee report on that surgeon would seem to be very pertinent. Its pertinence in a malpractice action against a staff member is less clear. To be used in the malpractice case it would probably be argued that the report is a part of a patient's clinical record. Certainly, this report does not fall within the generally accepted definition of a patient's clinical record, which is divided into three parts: (1) nurses' records, (2) records and reports from adjunct and special departments, and (3) the medical record proper, that is, that part that is the direct responsibility of the physician.[8] The tissue committee report has no bearing upon what is wrong with a patient or what is, or should be, done; it is, instead, a "postpatient" activity record, taking place after the patient has left the hospital.

Even though the records of a tissue committee do not constitute a part of a patient's hospital or clinical record, they are not, for that reason alone, inadmissible in evidence. We must therefore look to the general rules of evidence. Evidence is said to be hearsay when its probative force depends on the competency and credibility of some person other than the witness.[9] Stated another way, any statement offered in evidence that is not made by the author as a witness before the court, or when he is subject to cross examination, is hearsay. Basically, therefore, hospital records are hearsay evidence, and the courts of some states exclude them simply on that ground.[10] There are, however, a number of common law and statutory exceptions to the hearsay rule that permit the use of hospital records as evidence.

The common law exceptions are as follows:

1. Shopbook rule. A common law exception to the hearsay rule permits the introduction in evidence of business records or books of account, made as original entries, and relating to sales or service. It is doubtful that the records of a tissue committee fall within such a classification.

2. Entries made in the regular course of business. Entries, if made by a person whose duty it is to make them, who routinely makes such entries, and who has no

motive to falsify, are admissible upon proper authentication. This presents a question as to whether tissue committee reports are in any sense entries made in the regular course of business of a hospital.[11]

> The business of a hospital, it is self-evident, is to diagnose and treat its patients' ailments. Consequently, the only memoranda that may be regarded as [business records] . . . are those reflecting acts, occurrences or events that relate to diagnosis, prognosis or treatment or are otherwise "helpful to an understanding of the medical or surgical aspects of . . . [the particular patient's] hospitalization."

It should be noted in any court that the regular entry exception at common law only applied if the clerk who made the record was deceased or unavailable.

3. Official records. Records of public hospitals, if required to be kept by law, are admissible as public records. This exception, however, would not apply to the records of private hospitals, which are not kept by virtue of statutory direction.

4. Admissions against interest. These are statements made by one person to another that are in conflict with the interests of the person making the declaration. The tissue committee records cannot logically be considered as declarations against interest.

The statutory exceptions are as follows:

1. Shopbook rule. This common law rule has been enacted into statutory law in a number of states.[12] It permits the use in court of records kept in the regular course of a business at the time of the act referred to or within a reasonable time thereafter, if it is shown to be the regular course of such business to make such entries. Business is defined to include "profession, occupation and calling of every kind."

2. Uniform Business Records as Evidence Act. This act, which is quite similar to the statutory shopbook rule, has also been adopted in quite a number of states.[12] It applies to any type of business and refers to records made in the regular course of such business at or near the time of the act referred to.

Either of the foregoing types of statutes would probably be interpreted as sufficient authority for the admissibility of tissue committee reports in evidence if it be conceded that they are made in the regular course of business. It would still be necessary, however, to establish that the matter sought to be introduced was relevant to the issue involved.[13] For example, it would seem to be irrelevant to attempt to establish the malpractice of Dr. X in treating Y by introducing a tissue committee report showing, for example, that in a certain percentage of appendectomies performed by Dr. X there was a discrepancy between the preoperative diagnosis and the postoperative pathological findings. The inference of negligence, if any, is too remote to be valuable. Further, if the tissue committee report constitutes a conclusion upon the ultimate question to be determined by the jury, it would be inadmissible in most states.[14]

A final point dealing with the general question of the admissibility of any record relating to medical and surgical care is the privileged communications law of any particular state. These statutes and the court decisions construing them vary considerably. In general, however, they apply only to information that a physician needs in order to diagnose or treat his patient effectively. Since the reports of a tissue committee do not in any way influence diagnosis or treatment, such laws should not affect one way or the other the admissibility in evidence of such reports.

It will be apparent from the foregoing discussion that it is difficult to arrive at any uniform rule relating to the admissibility in evidence of tissue committee reports. Court decisions on the subject are conspicuous by their absence. About the most that can be said is that, if there is no statute in a state specifically requiring a hospital to have a tissue committee and to maintain and preserve a record of its activities, the records of a voluntary committee are probably not admissible in evidence in a malpractice action against a staff member for one or more of the following reasons: 1. They are hearsay. 2. They are irrelevant. 3. They are of no probative value. 4. They would constitute a conclusion upon the ultimate issue and would thus invade the province of the jury.

Apart from purely legal considerations, there are other reasons why such records should not be admissible. 1. Even though they may not be protected by the strict wording of a privileged communication statute, they are certainly of a highly confidential nature. 2. Hospitals would be discouraged from conducting intraorganization studies for the purpose of improving the competence of its employees and staff members.

As long as tissue committees continue to operate as training aids, deal only in case numbers, maintain tabular rather than narrative conclusions, and make only general medical findings rather than specific findings of individual negligence, it is doubtful that the reports of their activities will be admissible in evidence against a staff member charged with malpractice.

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6. Myers, R. S., and Stephenson, G. W.: Evaluation Form for Tissue Committees: Suggested Method for Tabulating Decision as to Justification for Surgery, J. A. M. A. **156**: 1577 (Dec. 25) 1954.

7. Ponton,[2] p. 183.

8. Ponton,[3] p. 131.

9. 31 Corpus Juris Secundum 919.

10. Hayt, E., and others: Law of Hospital, Physician and Patient, ed. 2, New York, Hospital Textbook Company, 1952, p. 676.

11. *Williams* v. *Alexander*, 309 N. Y. 283.

12. Hayt and others,[10] p. 680.

13. Hayt and others,[10] p. 44.

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MEDICAL NEWS

ALABAMA

Annual Clinical Meeting at Tuskegee.—The annual clinical meeting and the 38th annual meeting of the John A. Andrew Clinical Society, April 8-13, will honor Dr. Ulysses G. Dailey, Chicago, who, with the late Dr. John A. Kenney, organized the first Andrew clinic in 1912. The meeting will be held at Tuskegee Institute in conjunction with the 75th anniversary of the founding of the institute and the 100th anniversary of the birth of its late founder, Booker T. Washington. At the opening public health meeting Sunday, 6:30 p. m., the speaker will be Dr. Hugh H. Hussey Jr., associate professor of preventive medicine and public health, Georgetown University School of Medicine, Washington, D. C. Monday morning there will be a panel discussion on the Salk vaccine, with Dr. John E. Gorrell, New York, director of medical services of the National Foundation for Infantile Paralysis, as moderator and Drs. Jerome T. Syverton, Minneapolis, Robert F. Korns, Albany, N. Y., and Alexander D. Langmuir, Atlanta, Ga., as collaborators. On Monday evening, Dr. Edward L. Turner, Chicago, Secretary, Council on Medical Education and Hospitals of the A. M. A., will moderate a panel on medical education, on which the participants will be Dr. Robert C. Berson, Birmingham; Dr. Daniel T. Rolfe, Nashville, Tenn.; Dr. Edgar R. Pund, Augusta, Ga.; and Dr. Peter M. Murray of New York. A symposium on Congenital Heart Disease in Adults will be presented by Dr. John B. Johnson, professor of medicine, and Dr. Mitchell W. Spellman, assistant professor of surgery, Howard University College of Medicine, Washington, D. C., Tuesday morning at the Veterans Administration Hospital. On Tuesday evening, Dr. R. Frank Jones, director, division of urology, and Dr. Howard M. Payne, professor of medicine, Howard University College of Medicine, Washington, D. C., will be the principal speakers. The Charles R. Drew Memorial Lecture will be given by Dr. Paul R. Hawley, Chicago, director, American College of Surgeons, Wednesday morning. Wednesday evening, Mordecai W. Johnson, LL.D., president, Howard University, will talk on world affairs, and the distinguished service award will be presented to Dr. Dailey. Other speakers during the sessions include Reuben L. Kahn, D.Sc., professor of serology, University of Michigan Medical School, Ann Arbor; Dr. Robert A. Hingson, professor of anesthesia, Western Reserve University School of Medicine, Cleveland; and Dr. Edwin R. Nodine and Dr. Irving D. London, Montgomery. On Thursday there will be a symposium on cancer with Dr. Charles S. Cameron, New York, medical director of the American Cancer Society, as principal speaker.

CALIFORNIA

New Head of Ophthalmology Division.—Stanford University School of Medicine, San Francisco, has announced the appointment of Dr. Dohrmann K. Pischel as head of the division of ophthalmology. Dr. Pischel has been connected with his alma mater since 1928.

Memorial Dinner.—The annual memorial dinner of St. Mary's Hospital, San Francisco, is to be expanded this year to an all-day meeting, with a dinner in the evening at which the speaker will be Dr. William Boyd, professor of the history of medicine at University of Toronto Faculty of Medicine, Toronto, Canada. The meeting April 12, 9 a. m.-4:30 p. m., will include a panel on clinical medical physics; a clinicophysiological conference; and a clinicopathological conference. There will be a panel on suffering, prepared under the direction of John J. Preisinger and the staff of the McAuley Clinic of the hospital, in which a psychiatrist, a theologian, and an internist will participate, and a panel on medical-moral problems. Among the collaborators will be Dr. Lewis M. Hurxthal, of the Lahey Clinic, Boston, and Father Victor White, Oxford University. All members of the profession are cordially invited to attend.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

CONNECTICUT

Nu Sigma Nu Lecture.—"The Diagnosis of Valvular Heart Disease" will be presented by Dr. William Dock, professor of medicine, State University of New York College of Medicine at New York City, Brooklyn, at 8 p. m., April 12, in the Fitkin Amphitheater of Yale University School of Medicine, New Haven. Physicians are invited.

Society News.—Dr. Thomas J. Danaher, Torrington, who has served as vice-president of Connecticut Medical Service since 1953, has been elected to the presidency of that corporation. The first physician to assume that office, he is a past-president and former chairman of the council of the Connecticut State Medical Society. Dr. Henry A. Archambault, Taftville, was appointed chairman of the professional policy committee, and Dr. Louis F. Middlebrook Jr., West Hartford, was reelected secretary.——At the meeting on April 9, 8:15 p. m., the Yale Medical Society will present "Atypical Hypopituitarism" by Dr. Harold L. Sheehan, professor of pathology, University of Liverpool, England. The meeting will be held in Fitkin Amphitheater, Yale-New Haven Medical Center. Physicians on call should leave the number LOcust 2-1161, Ext. 865.

ILLINOIS

Medical Examination System Altered.—Preregistration physical examinations for new University of Illinois students at Urbana-Champaign may now be given by their own physicians instead of by the university health service. The university will continue to give free physical examinations to those who wish them and to give chest x-ray examinations to all new students.

Chicago

Kaplan Memorial Lectureship.—Under the sponsorship of the Chicago Neurological Society and Leo A. Kaplan Memorial Lectureship of the Phi Delta Epsilon Foundation, Prof. Georges Schaltenbrand, director, Neurologische Universitads Klinik, Wurzburg, Germany, will speak at the International Relations Center, 116 N. Michigan Ave., April 17, 8 p. m. His subject will be "Normal and Pathological Studies of Cerebrospinal Fluid Flow."

Cardiac Conference.—The monthly clinicopathological cardiac conference of Cook County Hospital will be held April 13 from 11 a. m. to 12 noon in the Children's Amphitheater, 700 S. Wood St. "Ruptured Aneurysms of the Aortic Sinus" will be presented by the guest speaker, Dr. Jesse E. Edwards, consultant, section of pathologic anatomy, Mayo Clinic, and professor of pathologic anatomy, University of Minnesota Graduate School, Minneapolis-Rochester.

Society News.—The Chicago Orthopedic Society will meet for dinner at 6:45 p. m., April 13, in private dining room 17 of the Palmer House (RA 6-7500), after which the following program will be presented at 8 p. m.:

Vertebra Plana (with a case report of an unusual cause for this condition), Harry I. Kaell, Chicago.

Arthrodesis of the Hip: The Use of Intramedullary Rod Fixation (with moving pictures of technique and patients to show results), Howard W. Schneider, Harvey.

Synovioma, Analysis of 21 Cases of This Uncommon Tumor, Edward A. Millar, Chicago.

Physicians are cordially invited to attend the scientific program.

Dr. Spink to Give Zeit Lecture.—The 13th annual F. Robert Zeit Memorial Lecture, sponsored by the undergraduates and alumni of Alpha Kappa Kappa Fraternity at Northwestern University Medical School, will be delivered at 4 p. m., April 13,

in Thorne Hall, 750 N. Lake Shore Dr., on the university's Chicago campus. Dr. Wesley W. Spink, professor of internal medicine at the University of Minnesota Medical School, Minneapolis, will speak on "The Challenge of Infectious Disease."

Lectures on Wound Healing.—The Stritch School of Medicine of Loyola University, department of biochemistry, is presenting lectures on The Healing of Wounds: Newer Findings and Concepts, Tuesdays at 11 a. m. in lecture hall A, 706 S. Wolcott Ave. On March 27, "Protein Metabolism During the Healing of Wounds" was discussed by Martin B. Williamson, Ph.D., department of biochemistry, and on April 3, "Pharmacological Considerations of Sulfur Compounds in Tissue Regeneration" by Charles D. Proctor, Ph.D., department of pharmacology, Stritch School of Medicine of Loyola University. On April 10 "The Role of Collagen in Wound Healing" will be presented by Edward P. Marbach, Ph.D., department of biochemistry, University of Chicago, and on April 24 Dr. Matthew Taubenhaus, Michael Reese Hospital, will have as his topic "Hormonal Regulation of Granulation Tissue Formation."

INDIANA

"No Cash" Cancer Tag Day.—A tag day with no cash contributions will be inaugurated by the Marion County Cancer Society April 12, when hundreds of volunteer women, representing clubs and organizations in Marion County, will tag pedestrians with a card which, when sent to the cancer society, will bring in return a booklet entitled "How Your Doctor Detects Cancer." No funds will be solicited. The idea of tag day and the booklet have been approved by the council and the cancer committee of the Indianapolis Medical Society.

KANSAS

Meeting on Public Health.—The Kansas Public Health Association will hold its annual meeting April 11-13 at the Municipal Auditorium in Topeka. Dr. W. Fred Mayes will be the keynote speaker Wednesday afternoon and on Thursday will talk on "Health and Sanitation in South Asia" at the general association luncheon. Dr. Mayes, assigned as a commissioned officer of the Public Health Service with the rank of colonel, served as a public health specialist in Pakistan and returned last summer to a full-time position at Harvard Medical School, Boston, where he teaches international health. Dr. Mayes formerly served the Kansas State Board of Health as director of the maternal and child health division, director of local health services, and assistant state health officer and later became full-time health officer of Wichita.

LOUISIANA

Symposium on Industrial Medicine.—The third annual Symposium on Industrial Medicine will be presented at Tulane University of Louisiana School of Medicine, New Orleans, through the division of graduate medicine April 12 and 13. The general subject for discussion, "Medical Examinations in Industry," will include the types and content of these examinations as well as their limitations. Dr. R. Lomax Wells, medical director of the Chesapeake and Potomac Telephone Companies, Washington, D. C., and Dr. Joe M. Bosworth, division medical director, Liberty Mutual Insurance Company, Atlanta, Ga., the guest speakers, will augment local faculty in internal medicine, orthopedics, ophthalmology, otolaryngology, obstetrics and gynecology, dermatology, psychiatry, and industrial medicine.

MASSACHUSETTS

Tufts Alumni Dinner.—The annual dinner meeting of the Tufts Medical Alumni Association will be held April 11, 6:30 p. m., at the Somerset Hotel, Boston. Dr. James A. Shannon, director, National Institutes of Health, Bethesda, Md., and assistant surgeon general, U. S. Public Health Service, will discuss poliomyelitis. Other speakers will be Dr. Joseph M. Hayman Jr., dean, Tufts College Medical School, Boston; Nils Y. Wessell, Ph.D., president of Tufts College; and Dr. Timothy F. P. Lyons, Boston, of the 25-year class, which will hold its reunion on April 10 and 11. During Wednesday there will be open house at the medical school.

MICHIGAN

Phi Delta Epsilon Lecture.—The Omega chapter of Phi Delta Epsilon Fraternity at the University of Michigan, Ann Arbor, is holding its 10th annual lectureship April 9, at which time Dr. Eugene B. Ferris, professor of internal medicine at Emory University School of Medicine, Emory University, Ga., will discuss "Etiologic Factors of Emphysema."

Nutrition Conference.—The second annual Nutrition Conference, sponsored by Wayne University College of Medicine, Detroit, will be held in the medical school auditorium April 13, beginning at 2 p. m. Speakers on the general subject "Nutrition and the Maintenance of Tissue Structure and Function" will include Albert G. Hogan, Ph.D., University of Missouri, Columbia (Nutrition and Congenital Abnormalities), Bertha S. Burke, M.A., Harvard University, Boston (Maternal Nutrition as Related to Mother and Infant), and Dr. William J. Darby, Vanderbilt University School of Medicine, Nashville, Tenn. (Interrelations Between Essential Nutrients: Clinical and Experimental Studies). Information may be obtained by writing the Department of Physiological Chemistry, Wayne University College of Medicine, Detroit 7.

Cancer Day.—The Genesee County Medical Society will observe its 11th annual Cancer Day April 11 at the Hurley Hospital, Flint. The following program will be presented at 9:30 a. m.:

Cancer of the Uterine Body; Its Diagnosis and Treatment, Newell W. Philpott, Montreal, Canada.

Problems of Diagnosis and Therapy of Neoplasm Involving the Blood Forming Tissue, Leon O. Jacobson, Chicago.

Psychiatric Aid in the Management of Cancer, Arthur M. Sutherland, New York City.

After luncheon in the lobby floor cafeteria (compliments of Hurley Hospital Board of Managers), "Past Achievements, Present Activities and Future Prospects for Cancer Prevention" will be outlined by Dr. Carl V. Weller, department of pathology, University of Michigan Medical School, Ann Arbor, and "Soft Somatic Tissue Sarcomas" by Dr. Theodore R. Miller, department of surgery, Memorial Center for Cancer and Allied Diseases, New York. The session will end with a panel discussion moderated by Dr. H. Marvin Pollard, department of internal medicine, University of Michigan Medical School, Ann Arbor, with the day's speakers as collaborators. A social hour, 5:30 p. m., will precede the subscription dinner at the Durant Hotel.

MISSOURI

Menorah Memorial Lecture.—Dr. Benjamin Felson, professor of radiology at the University of Cincinnati College of Medicine, will present the sixth annual Memorial Lecture in the auditorium of the Menorah Medical Center April 9, 8 p. m. Dr. Felson's lecture, "Current Techniques of Chest Roentgen Examination," is sponsored by the medical staff of the Menorah Medical Center as a memorial to members of the staff who have died during the past year.

NEW YORK

Conference on Ophthalmology.—The New York Society for Clinical Ophthalmology will hold a participating conference at the Waldorf-Astoria Hotel, New York City, April 13-14. Seminars will cover glaucoma, biomicroscopy, therapeutics, muscles, and neuro-ophthalmology.

Israel Strauss Lecture.—The second Israel Strauss Annual Lecture on "Current Trends in Basic Psychiatric Research" will be given by Dr. William Malamud, professor of psychiatry and neurology, Boston University School of Medicine, April 8, 10:30 a. m., at the Altschul Auditorium of Hillside Hospital, Glen Oaks. Physicians are cordially invited.

Gordon Memorial Lecture.—The Zeta chapter of Phi Delta Epsilon Fraternity at the State University of New York College of Medicine at New York City, Brooklyn, will present its ninth annual Murray B. Gordon Memorial Lecture April 10. Dr. Isidore Snapper, head, department of medicine, Beth-El Hospital, Brooklyn, will discuss "Newer Aspects of Lupus Erythematosus."

Society News.—On April 13 the Phi Delta Epsilon National Medical Fraternity will honor the following physicians, who have been active members of the fraternity for 50 years and still practice medicine: Abraham J. Beller, George M. Bennett, Aaron S. Blumgarten, Bernard H. Eliasberg, Benjamin Freudenfall, Samuel Kleinberg, and Joshua H. Leiner, New York, and Benjamin Koven, Brooklyn.

Dr. Hess to Speak at Dinner Dance.—Dr. Elmer Hess, Erie, Pa., President of the American Medical Association, will be the principal speaker at the 150th anniversary dinner dance of the Onondaga County Medical Society in the Hotel Syracuse, April 12. Among the guests will be Mayor Donald H. Mead, Congressman R. Walter Riehlman, Mrs. Isadore Zadek, New York, president, New York State Medical Auxiliary, and Dr. Renato J. Azzari, New York, president, Medical Society of the State of New York. The occasion will also mark the 20th anniversary of the women's auxiliary of the Onondaga County Medical Society.

Sesquicentennial Celebrations.—The New York County Medical Society, of which Dr. Gerald D. Dorman, New York City, is president, will celebrate the 150th anniversary of its founding during April. The society, the largest local medical society in the nation (7,000 members), was founded in 1906. One of the events of the sesquicentennial will be rededication of the society to the service of the citizens of New York. Other plans for the celebration include historical exhibits; hospital programs on the newest clinical applications of medicine; open house and special exhibits in five medical schools of New York City; television and radio programs for the public on "New Horizons in Medicine"; and special cancellation postmarks for all letters mailed in Manhattan during the event. A special anniversary seal has been created for use on all letters mailed by physicians and as a motor vehicle sticker on the cars of physicians. A joint celebration with the American-Hungarian Medical Association will be held April 13, 8:30 p. m., in the New York Academy of Medicine Building. After introductory remarks by Dr. Frederick S. Reiss, president, American-Hungarian Medical Association, the following symposium on radioactive isotopes in medicine will be presented:

Red Cell Volume and Plasma Volume Studies in Medicine, Utilizing Radioactive Chromium, Seymour J. Gray (by invitation), Boston.

Measurement of Blood Volume Changes in Surgery with Radioactive Chromium and Iodine, Charles L. Fox Jr. (by invitation), New York.

Radioactive Co^{60} B_{12} in Differential Diagnosis of Macrocytic Anemias, George B. Jerzy Glass (by invitation), New York.

Radioactive Iodine in the Diagnosis and Treatment of Hyperthyroidism, Bernard A. Sachs, New York.

Radioactive Isotopes in the Diagnosis and Therapy of Malignancies, Morton M. Kligerman (by invitation), New York.

Discussion will be by Drs. Frank J. Borrelli and Solomon Silver, New York.

New York City

Panel on Exophthalmos.—At its meeting April 13, 8 p. m., in the New York Academy of Medicine Building, the New York Society for Clinical Ophthalmology will present a panel discussion on exophthalmos by Drs. John W. Henderson, Ann Arbor, Mich.; Howard C. Naffziger, San Francisco; Solomon Silver, New York; and Edmund B. Spaeth, Philadelphia. The medical profession is cordially invited.

Cornell Alumni Meeting.—The annual meeting of the Alumni Association of Cornell University Medical College will be held April 13-14 at the medical center. A program of scientific sessions will be presented by various faculty and alumni members on Friday. On Saturday the eighth annual alumni award of the medical college will be bestowed on Dr. Preston A. Wade, '25, professor of clinical surgery. A snack supper has been scheduled for Friday evening and a dinner dance at the Hotel Biltmore for Saturday.

OHIO

Meeting of Chest Physicians.—The Ohio chapter of the American College of Chest Physicians will hold its annual meeting in conjunction with the annual meeting of the Ohio State Medical Association at the Public Auditorium, Cleveland, April 10. The following program, arranged under the direction of Dr. Howard S. Van Ordstrand, Cleveland, will be presented at 10 a. m.:

Is the Thoracic Lesion Malignant—Should We Operate? Julian Johnson, Philadelphia.

Some Pitfalls in Thoracic Diagnosis, Bruce E. Douglass, Rochester, Minn.

Surgery for Chronic Pericardial Effusion: Biopsy and Pericardial Window, Donald B. Effler, Cleveland.

High-Speed Cine-Fluorography for Angiocardiography During Cardiac Catheterization (film with comments by speaker), F. Mason Sones Jr., Cleveland.

State Medical Meeting in Cleveland.—The Ohio State Medical Association will hold its annual meeting April 10-12 in the Cleveland Public Auditorium under the presidency of Dr. Charles L. Hudson of that city. On Tuesday morning a panel discussion, "Asphyxia in the Newborn," will be presented before the sections on anesthesiology and pediatrics. At the joint session of the sections on general practice and surgery Tuesday afternoon, Dr. Curtis P. Artz, Fort Sam Houston, San Antonio, Texas, will present "The Treatment of Burns." Dr. Julian Johnson, Philadelphia, will discuss "Injuries of the Chest" and Dr. Carl E. Badgley, Ann Arbor, Mich., will talk on chronic back pain. The section on nervous and mental diseases at its meeting Tuesday afternoon will have a panel discussion on psychiatric units in general hospitals, which will be preceded by "Steps in Psychic Driving Theory" by Dr. D. Ewen Cameron, Montreal, Canada. Dr. Hermann M. Burian, Iowa City, will consider "Problems in Diagnosis and Treatment of Strabismus" at the meeting of the section on ophthalmology Tuesday afternoon. This session will end with a panel discussion, "Surgical Management of Cataract with Glaucoma." Medical motion pictures on anemia, on congenital malformations of the heart, and on William Harvey are scheduled for Tuesday afternoon. On Wednesday afternoon the section on obstetrics and gynecology will present panel discussions on office gynecology and preventable obstetric problems. Wednesday morning Dr. Donald L. McRae, Montreal, Canada, will discuss "The Significance of Bony Abnormalities About the Foramen Magnum" at the joint session of the section on neurological surgery and section on radiology. The section on physical medicine will have as guest speaker on Wednesday, 12 noon, Dr. Morton Marks, New York, on "Advances in the Diagnosis and Treatment of Neurological Diseases." A workshop on medical writing will be conducted by Dr. Jonathan Forman, Columbus, editor, the *Ohio State Medical Journal*, Wednesday morning. The general session will convene Wednesday at 2 p. m. At 2:30 p. m. Dr. McRae will present "Scope and Value of Radiological Diagnosis in Cerebral Vascular Accidents," and at 4 p. m. Dr. Marks will speak on "Rehabilitation of the Hemiplegic Patient." The second general session will be opened Thursday morning with a panel discussion, "Treatment of the Common Forms of Arthritis," and will conclude with a presentation, "Where Do We Stand on Polio?" by Dr. Frederick C. Robbins, Cleveland. The annual banquet is scheduled for Wednesday at the Hotel Statler. The section on internal medicine will present panel discussions, "Drugs Affecting Mood and Behavior" and "Cardiac Surgery" on Thursday. A panel discussion on the headache problem will be offered by the section on otorhinolaryngology Thursday afternoon. At 2 p. m. Thursday Dr. Edgar Burns, New Orleans, will consider "Problems Involved in the Management of Bladder Neck Obstruction in Children" before the meeting of the section on urology, and at 3:30 p. m. he will moderate a panel discussion on pyelograms.

PENNSYLVANIA

County Medical Institute.—The Philadelphia County Medical Society announces the 20th annual postgraduate institute and convention, which will be held April 10-13 at the Bellevue-Stratford Hotel, Philadelphia. The sessions will open Tuesday at 10 a. m. with a panel discussion, "Chemotherapy of Psychiatric Disorders." A panel discussion, "The Nutritional Needs of the Patient," is scheduled for 3:30 p. m. The guest speaker Tuesday afternoon will be Dr. Harold A. Zintel, New York, whose subject will be "Surgical Contributions to the Treatment of Hypertension." The guest speaker Wednesday morning for the program on the care of the chronically ill patient will be

Dr. Joseph Earle Moore, Baltimore, editor, *Journal of Chronic Diseases*, who will have as his topic "The Natural History of Chronic Illness and Its Importance to the Family Physician." At 12 noon Dr. Charles C. Congdon, Atomic Energy Commission Laboratories, Oak Ridge, Tenn., will discuss "The Mechanism of Recovery from Irradiation Injury." The Wednesday afternoon session will open with a panel discussion, "What Are the Disadvantages and Undesirable Side Effects of the Newer Drugs?" Dinner and entertainment are scheduled for Wednesday at 7 p. m. (dress optional). A symposium, "Current Trends on Diagnosis and Management of Heart Disease," will be presented Thursday at 9 a. m. At 9:45 a. m. Dr. Henry I. Russek, U. S. Public Health Service Hospital, Staten Island, New York, will consider "A Realistic Evaluation of Coronary Vasoactive Drugs." Thursday afternoon, "Treatment of Allergic Eczema in Children" by Dr. Lewis Webb Hill, Boston, will be followed by panel discussion "Diagnostic Import and Management of Abnormal Uterine Bleeding." A clinical-pathological conference will be held Thursday evening. The morning session Friday will close with "Modern Approach to Symptomatic Therapy" by Dr. Walter Modell, New York, and the afternoon session with "Modern Concepts of the Cause and Management of Hypertension" by Dr. Edward D. Freis, Washington, D. C.

UTAH

Pediatric Symposium.—The Utah chapter of the American Academy of General Practice will sponsor a symposium on pediatrics at the Hotel Newhouse, Salt Lake City, April 12-13.

University News.—Horace W. Davenport, Ph.D., has resigned as professor and head of the department of physiology, University of Utah College of Medicine, Salt Lake City, to assume similar duties at the University of Michigan Medical School, Ann Arbor.

Dr. Price Named Dean.—Dr. Philip B. Price, formerly chairman of the department of surgery and more recently acting dean, has been named permanent dean of the University of Utah College of Medicine, Salt Lake City. He will retain his position of professor in the department of surgery, a post he assumed when he joined the medical faculty in 1943.

VIRGINIA

Society News.—The guest speaker at the annual meeting of the Virginia League for Planned Parenthood, April 20, 12:30 p. m., in the Williamsburg Lodge, Williamsburg, will be Dr. Abraham Stone, medical director, Margaret Sanger Research Bureau, New York City. Call 7-5960 for lunch reservation.——Brig. Gen. John R. Wood, Comm., Army Medical School, Walter Reed Army Hospital, Washington, D. C., will present the annual lecture of the Richmond Academy of General Practice April 10, 8:30 p. m., at the Richmond Academy of Medicine, 1200 E. Clay St.

Clinic Day in Arlington.—The seventh Annual Northern Virginia Clinic Day will be held April 8 at the Wakefield High School in Arlington. Speakers from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, will present the following program:

Pelvic Endometriosis, Arthur L. Haskins Jr., head of the department of obstetrics and gynecology.
Portal Hypertension, Robert W. Buxton, head of the department of surgery.
Comprehensive Diagnosis and Management of Medical Problems (Panel), Ephraim T. Lisansky, associate professor of medicine and associate in psychiatry, Charles Van Buskirk, chief of the division of neurology, and Benjamin Pope, Ph.D., instructor in medical psychology.
Blood Ammonia, a Common Denominator in Coma and Other Allied Conditions, Samuel P. Bessman, associate professor of pediatrics.
Evaluation of the Personality as an Aid to the Management and Prognosis of an Organic Disease, Jacob E. Finesinger, head of the department of psychiatry.

There will be round-table seminars for obstetricians and gynecologists, for surgeons, and for psychiatric social workers, social workers, and public health nurses. The registration fee, $5, will include the program, the luncheon, and a cocktail party for the physicians and their guests at the George Mason Hotel in Alexandria. Registration may be forwarded to Northern Virginia Clinical Assembly, P. O. Box 192, Alexandria.

WEST VIRGINIA

Society News.—The annual meeting of the West Virginia chapter of the American College of Surgeons will be held at the Greenbrier, White Sulphur Springs, April 13-14. A feature will be a panel discussion on "Diseases of the Thyroid Gland." The chapter sessions will open Friday at 2:30 p. m. All members of the chapter have been invited to attend the final session of the annual meeting of the American Surgical Association Friday morning.

Annual Meeting of General Practitioners.—The fourth annual scientific assembly of the West Virginia chapter of the American Academy of General Practice will convene at the Daniel Boone Hotel, in Charleston, April 14-15. The following program on surgery will be presented Saturday morning:

Use of Depressant Drugs, Stuart C. Cullen, Iowa City.
Carcinoma of the Stomach, Alton Ochsner, New Orleans.
Cause of Pain Following Cholecystectomy for Cholelithiasis, Waltman Walters, Rochester, Minn.
Burns, Henry N. Harkins, Seattle.

Dr. Aaron Arkin, Chicago, the first speaker on the Saturday afternoon program, will discuss "Pericarditis." The following papers then will be presented:

Osteoarthritis, Russell L. Cecil, New York.
Sodium and Potassium Metabolism in Health and In Disease, Thaddeus S. Danowski, Pittsburgh.
Psychosomatic Aspects of Drug Therapy, Harry Gold, New York.
Osseous Reflections of General Disease, LeRoy H. Sloan, Chicago.
Practical Considerations in the Management of Diabetes, Garfield G. Duncan, Philadelphia.

Dr. Richard T. Shackelford, Baltimore, guest speaker at the banquet Saturday evening, will have as his subject "Draping the Iron Curtain." Dr. Robert B. Greenblatt, Augusta, Ga., will open the program Sunday morning with "The Role of Depressants, Antidepressants, Relaxants, and Hormones in the Management of the Menopause." Dr. Richard W. TeLinde, Baltimore, will discuss "Incontinence of Urine in Women" and Dr. J. Robert Willson, Philadelphia, "Edema During Pregnancy: Its Cause and Treatment." The following program will be presented at the final session Sunday afternoon:

Common Urologic Conditions in Infants and Children, Meredith F. Campbell, New York.
Interscapular Pain, Bernard D. Judovich, Philadelphia.
The Physician's Responsibility in Recognition and Management of Hearing Loss, Francis L. Lederer, Chicago.
Closure of Wounds and Lacerations, Paul S. Williamson, Albuquerque, N. Mex.

GENERAL

Arthur Godfrey to Address Medical Aviation Banquet.—The Civil Aviation Medical Association will hold its convention banquet at the Drake Hotel, Chicago, at 7 p. m., April 14. The guest speaker of the evening is Arthur Godfrey. Nonmembers may obtain tickets ($10 each) from the arrangements chairman, Dr. Oscar H. Comess, 3507 W. Lawrence Ave., Chicago 25.

Meeting of Constantinian Society.—The 11th annual assembly of the Constantinian Society will convene at Del Monte Lodge, Pebble Beach, Calif., April 11-14. The medicomilitary session Thursday morning has been arranged by the department of medicine, Letterman Army Hospital, San Francisco. Col. Paul S. Fancher, M. C., will serve as chairman. Dr. Robert F. Escamilla will be chairman of the scientific session Friday morning, which will be presented by members of the faculty of the University of California School of Medicine, San Francisco.

Congress of Anesthesiologists.—The 30th annual congress of the International Anesthesia Research Society will be held at the Flamingo Hotel and Club, Miami Beach, Fla., April 9-12. The sessions will open Monday with "Blood Sugar Levels After the Use of Succinylcholine" by Capt. Richard J. Ward, M. C., U. S. A. F., New York, after which "Causes and Prevention of Prolonged Apnea with Succinylcholine" will be discussed by Dr. Francis F. Foldes, Pittsburgh. The morning session will close with a panel, "Teaching of Anesthesia." In all, 38 papers have been scheduled. The final session will open Thursday morning with "Public Relations" by Dr. James H. Buskirk, Cambridge, Mass., and close with "Autopsy Findings in Operating Room Deaths" by Dr. Alfred E. Cronkite, Fort Lauderdale, Fla.

American Radium Society.—The 38th annual meeting of the American Radium Society will convene at the Shamrock Hotel and the M. D. Anderson Hospital, Houston, Texas, April 9-11. The presidential address will be delivered Monday morning by Dr. Grant H. Beckstrand, Long Beach, Calif. Monday afternoon will be devoted to a symposium, "Choice and Timing of Palliative Procedure for Advanced Breast Carcinoma." Cocktails will precede the annual dinner, 6 p. m., at the Houston Club, where the Janeway Lecture, "Reflections on Malignant Lymphomas," will be delivered by Dr. Lloyd F. Craver, New York. A symposium, "Cancer of the Thyroid Gland," will be presented Tuesday afternoon. Round-tables will be held at the M. D. Anderson Hospital Wednesday morning, and there will be escorted tours of the hospital.

Railway Surgeons Meet in Chicago.—The American Association of Railway Surgeons will hold its 68th annual meeting at the Drake Hotel, Chicago, April 10-12, under the presidency of Dr. Richard A. Sutter, St. Louis. The sessions will open Tuesday, 9:45 a. m., with "Indications and Contraindications for Surgery in the Jaundiced Patient," by Dr. Warren H. Cole, Chicago. Tuesday afternoon a panel, "Primary Carcinoma of the Lung," will be presented, and Wednesday afternoon there will be a panel on fractures of the neck of the femur. The annual dinner, Wednesday, 7:30 p. m., will be preceded by a fellowship hour. The scientific sessions will close Thursday noon with "Disease vs. Injury, Compensable or Noncompensable" by Dr. Earl D. McBride, Oklahoma City. A program of surgical and medical movies is scheduled for Thursday afternoon.

Society News.—On March 29 the office of the **College of American Pathologists** moved to Room 2115, Prudential Plaza, Chicago 1.——The Northwest Section of the **American Congress of Physical Medicine and Rehabilitation** will meet halfway between Seattle and Portland, at the Lewis-Clark Hotel in Centralia, Wash., April 14, for a business meeting, presentation of papers, discussion, and a banquet. All members and friends are cordially invited.——The annual meeting of the **North Pacific Society of Neurology and Psychiatry** will be held at the Gearhart Hotel, Gearhart, Ore., April 12-14, under the presidency of Dr. Wendell H. Hutchens, Portland, Ore. The guest speaker will be Dr. Theodore B. Rasmussen, professor of neurosurgery at the McGill University Faculty of Medicine, Montreal, Canada. For further information contact Dr. John W. Evans, Secretary, 919 Taylor St. Bldg., Portland, Ore.

United States-Mexico Border Public Health Association.—The 14th annual meeting of the United States-Mexico Border Public Health Association will be held jointly in Mexicali, Baja California, and Calexico, Calif., April 13-16. The theme is "Public Health in Border Agricultural Areas." The general session, Saturday morning, will consider the medicosocial aspect, sanitation problems, and the problems involved in providing health services. Among the topics projected for discussion are: Zoonosis and Rural Health, Medical Aspects of the Farm Placement Program, Problems in Recruitment and Training of Personnel in Border Health Departments, and Training of Border Personnel in the Techniques of VD Contact Interviewing and Investigations. Further information may be obtained from Dr. Sidney B. Clark, Secretary, United States-Mexico Border Public Health Association, 243 U. S. Court House, El Paso, Texas.

Meeting of Aero Medical Association.—The Aero Medical Association will hold its annual meeting April 16-18 at the Drake Hotel, Chicago. After the address of welcome Monday, 9 a. m., by Dr. Kenneth E. Dowd, Montreal, Canada, president, the Louis H. Bauer Lecture will be delivered by Dr. Frank B. Berry, Washington, D. C., Assistant Secretary of Defense (Health and Medical). The general session will open at 10:30 a. m. with "Emergency Survival in the Arctic" by Dr. Kaare Rodahl, U. S. A. F. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. The Civil Aviation Medical Association will have a panel discussion, "The Problem of the Aging Pilot," at 2 p. m. Monday. The Civil Aeronautics Administration medical forum will be presented at 4 p. m. The Airlines Medical Directors Association has scheduled a panel discussion on current airline medical problems for Tuesday, 8:30 a. m. The sessions will close Wednesday afternoon with a symposium, "Escape from High Performance Aircraft," moderated by Capt. Clifford P. Phoebus, MC, U. S. N. The Wives Wing of the Aero Medical Association will meet simultaneously.

Gastroenterologists Meet in New Orleans.—The southern regional meeting of the American College of Gastroenterology will be held April 8 at the Louisiana State University School of Medicine, New Orleans. Dr. James T. Nix, New Orleans, president, American College of Gastroenterology, will preside at the first session, which will include the following papers by New Orleans physicians: "Massive Gastrointestinal Hemorrhage" by Dr. Charles J. Miangolarra; "Problems and Management of Ulcerative Colitis As Seen in New Orleans" by Dr. Charles A. Jones; and "Aberrant Ectopic Tissue in the Stomach" by Dr. Isaac W. Kaplan. Dr. Louis Ochs Jr., chairman, board of governors, American College of Gastroenterology, will preside at the second session, at which "Value of Proctoscopy as Part of Routine Physical Examination" will be considered by Dr. Alton Ochsner, New Orleans; "Etiology and Therapy in Hepatic Coma" by Dr. J. Robert Snavely, Jackson, Miss.; and "Operative Cholangiography" by Dr. Paul D. Abramson, Shreveport, La. At 8 p. m. the first Abraham L. Levin Memorial Lecture, "Recent Advances in Ulcerative Diseases of the Gastrointestinal Tract," will be delivered by Dr. Asher Winkelstein, assistant clinical professor of medicine, Columbia University College of Physicians and Surgeons, and consulting gastroenterologist, Mount Sinai Hospital, New York.

Northern Tri-State Meeting.—The 83rd annual meeting of the Northern Tri-State Medical Association (Indiana, Ohio, and Michigan) will convene in the Rackham Auditorium, Ann Arbor, Mich., April 12, under the presidency of Dr. C. Howard Ross, Ann Arbor. After an address of welcome by Dr. L. Dell Henry, Ann Arbor, president, Washtenaw County Medical Society, panel discussions will be held on "Medical Education of Tomorrow," "Common Gynecological Errors," "The Geriatric Lung" (the Cyrus C. Sturgis panel), "The Doctor As a Witness," and "The Hypotensives—Their Strength and Pitfalls in Therapy." At luncheon, 12:10 p. m., "The Greatest Problem Facing American Medicine" will be considered by Dr. John S. De Tar, Milan, Mich., national president of the American Academy of General Practice. The afternoon session will open at 2 p. m. with "The Salk Vaccine After One Year" by Dr. Thomas Francis Jr., Dr. Otto K. Engelke, F. M. Hemphill, Ph.D., Ann Arbor, Mich., and Dr. John D. Porterfield III, Columbus, Ohio. The Frederick A. Coller panel, "The Acute Abdomen," will be presented at 2:40 p. m., the James L. Wilson panel, "Pediatric Neurology," at 3:20 p. m., and the Mark Marshall panel, "Thyroid Gland, Normal Function and Pathology," at 4 p. m. At 4:40 p. m. the distinguished medical citizenship award will be presented to Dr. Howard H. Cummings, professor emeritus, postgraduate medical education, University of Michigan Medical School, Ann Arbor. Cocktails at the Allenel Hotel, 5:45 p. m., will precede dinner, 7 p. m., and the meeting of the Washtenaw County Medical Society (Cancer Program).

LATIN AMERICA

Pediatric Congress.—The sixth National Congress of Pediatrics of Mexico will be held in the University City of Mexico City, May 1-5. Official topics include: "Protection to Children in Rural Zones," "Present Status of Immunizations in Children," "New Progress in the Treatment of Infections in Children," "Meningoencephalitis," and "Congenital Cardiopathies." Round-table discussions will cover many problems concerned with health and nutrition. Registration fee is 125 Mexican pesos, equivalent to $10. Information may be obtained from: Dr. Ignacio Avila Cisneros, Oficinas de la Comision Organizadora, Calzada de Madereros No. 240, Mexico, D. F., Mexico.

FOREIGN

Symposium on the Diencephalon.—An International Symposium on the Diencephalon will be held May 3-5 at the Museo Nazionale Della Scienza E Della Tecnica, Sala Delle Colonne, Piazza S. Vittore, 17-Milano, Italy. The meeting, organized by

the Milan section of the Italian Society of Experimental Biology, will be devoted to discussions on diencephalon control of endocrine activity. In all, 21 papers will be read by participants from various countries.

Congress on Chest Diseases.—The fourth International Congress on Diseases of the Chest of the American College of Chest Physicians will be held in Cologne, Germany, Aug. 19-23, under the patronage of Federal Chancellor Dr. Konrad Adenauer. The main subjects will deal with the problems of coronary diseases (diagnosis, pathophysiology, and surgery); industrial diseases of the chest; tuberculosis; lung and heart function; and tumors of the mediastinum. This year's congress will be held with special reference to surgery of coronary diseases, but presentations on any other subject in the field of diseases of the chest will also be accepted. Applications for scientific presentations will not be accepted after April 30. Information may be obtained from the secretariat of the congress: Fourth International Congress of the American College of Chest Physicians, Köln-Deutz, Germany, Messeplatz.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1956 Annual Meeting, Chicago, June 11-15.
1956 Clinical Meeting, Seattle, Nov. 27-30.
1957 Annual Meeting, New York, June 3-7.
1957 Clinical Meeting, Philadelphia, Dec. 3-6.
1958 Annual Meeting, San Francisco, June 23-27.
1958 Clinical Meeting, Minneapolis, Dec. 2-5.

AERO MEDICAL ASSOCIATION, Drake Hotel, Chicago, Apr. 16-18. Dr. Thomas H. Sutherland, P. O. Box 26, Marion, Ohio, Secretary.

ALABAMA, MEDICAL ASSOCIATION OF THE STATE OF, Birmingham, Apr. 19-21. Dr. Douglas L. Cannon, 537 Dexter Ave., Montgomery, Secretary.

AMERICAN ACADEMY OF NEUROLOGY, Hotel Jefferson, St. Louis, Apr. 23-28. Dr. Thomas W. Farmer, Dept. of Medicine, University of North Carolina, Chapel Hill, N. C., Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Rice Hotel and Sam Houston Coliseum, Houston, Texas, Apr. 16-19. Dr. E. H. Christopherson, 1801 Hinman Ave., Evanston, Illinois, Executive Secretary.

AMERICAN ASSOCIATION FOR CLEFT PALATE REHABILITATION, Muehlebach Hotel, Kansas City, Mo., May 3-5. Dr. Richard C. Webster, 1101 Beacon Street, Brookline 46, Mass., Chairman, Program Committee.

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE, Washington Duke Hotel, Durham, N. C., Apr. 19-21. Dr. Ilza Veith, 950 East 59th St., Chicago 37, Executive Secretary.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS, Chalfonte-Haddon Hall, Atlantic City, N. J., Apr. 16-20. Dr. F. S. Cheever, Univ. of Pittsburgh, School of Public Health, Pittsburgh 13, Secretary.

AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS, Netherland Plaza Hotel, Cincinnati, Apr. 26-28. Dr. Edward A. Gall, Dept. of Pathology, Cincinnati General Hospital, Cincinnati 29, Secretary.

AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Drake Hotel, Chicago, Apr. 10-12. Dr. Chester C. Guy, 5800 Stony Island Ave., Chicago 37, Secretary.

AMERICAN ASSOCIATION FOR THORACIC SURGERY, Fontainebleau Hotel, Miami Beach, Fla., May 7-9. Dr. Paul C. Samson, 3959 Happy Valley Road, Lafayette, Calif., Secretary.

AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION, Sheraton-Mt. Royal Hotel, Montreal, Canada, May 15-16. Dr. F. Johnson Putney, 1719 Rittenhouse Square, Philadelphia 3, Secretary.

AMERICAN COLLEGE OF ALLERGISTS, Hotel New Yorker, New York, Apr. 15-20. Dr. Fred W. Wittich, 401 Marquette Bank Bldg., Minneapolis 2, Secretary.

AMERICAN COLLEGE OF CARDIOLOGY, Drake Hotel, Chicago, May 16-18. Dr. Philip Reichert, Empire State Bldg., New York 1, Secretary.

AMERICAN COLLEGE HEALTH ASSOCIATION, Hotel Nicollet, Minneapolis, May 17-19. Dr. Irvin W. Sander, Wayne University, Detroit, Secretary.

AMERICAN COLLEGE OF PHYSICIANS, Biltmore Hotel and Shrine Auditorium, Los Angeles, Apr. 16-20. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

AMERICAN FEDERATION FOR CLINICAL RESEARCH, Chalfonte-Haddon Hall, Atlantic City, N. J., April 29. Dr. William W. Stead, VA Hospital, Minneapolis 17, Secretary.

AMERICAN GASTROENTEROLOGICAL ASSOCIATION, Claridge Hotel, Atlantic City, N. J., Apr. 27-28. Dr. H. Marvin Pollard, University Hospital, Ann Arbor, Mich., Secretary.

AMERICAN GERIATRICS SOCIETY, Palmer House, Chicago, May 3-4. Dr. Malford W. Thewlis, 25 Mechanic St., Wakefield, R. I., Secretary.

AMERICAN GOITER ASSOCIATION, Drake Hotel, Chicago, May 3-5. Dr. John C. McClintock, 149½ Washington Ave., Albany 10, N. Y., Secretary.

AMERICAN GYNECOLOGICAL SOCIETY, The Shoreham, Washington, D. C., May 21-23. Dr. John I. Brewer, 104 South Michigan Ave., Chicago 3, Secretary.

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, Convention Hall, Philadelphia, April 23-27. Dr. Henry F. Smyth Jr., Mellon Institute, Fifth Ave., Pittsburgh 13, Executive Secretary.

AMERICAN LARYNGOLOGICAL ASSOCIATION, Seigniory Club, Canada, May 13-14. Dr. Harry P. Schenck, 326 South 19th St., Philadelphia 3, Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Sheraton-Mt. Royal Hotel, Montreal, Canada, May 15-17. Dr. Steward Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

AMERICAN OPHTHALMOLOGICAL SOCIETY, The Homestead, Hot Springs, Va., May 31-June 2. Dr. Maynard C. Wheeler, 30 West 59th St., New York 19, Secretary.

AMERICAN OTOLOGICAL SOCIETY, Seigniory Club, P.Q., Canada, May 11-12. Dr. Laurence R. Boies, 90 South Ninth St., Minneapolis 2, Secretary.

AMERICAN PEDIATRIC SOCIETY, The Inn, Buck Hill Falls, Pa., May 6-11. Dr. Aims C. McGuinness, Memorial Hospital Association of Kentucky, 1427 I St., N.W., Washington 5, D. C., Secretary.

AMERICAN PHYSIOLOGICAL SOCIETY, Atlantic City, N. J., Apr. 16-20. Dr. Allan C. Burton, University of Western Ontario, London, Ontario, Canada, Secretary.

AMERICAN PSYCHIATRIC ASSOCIATION, Chicago, April 30-May 4. Dr. William Malamud, 80 East Concord St., Boston 18, Secretary.

AMERICAN RADIUM SOCIETY, Shamrock Hotel, Houston, Texas, Apr. 9-11. Dr. Robert E. Fricke, 102 Second Ave. S.W., Rochester, Minn., Secretary.

AMERICAN SOCIETY FOR ARTIFICIAL INTERNAL ORGANS, Atlantic City, N. J., Apr. 15-16. Dr. Peter F. Salisbury, Institute for Medical Research, 4751 Fountain Ave., Los Angeles 29, Secretary.

AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, Chalfonte-Haddon Hall, Atlantic City, N. J., Apr. 15-18. Dr. Philip Handler, Duke University, Durham, N. C., Secretary.

AMERICAN SOCIETY FOR CLINICAL INVESTIGATION, Chalfonte-Haddon Hall, Atlantic City, N. J., April 30. Dr. J. D. Myers, University of Pittsburgh School of Medicine, Pittsburgh 13, Secretary.

AMERICAN SOCIETY FOR EXPERIMENTAL PATHOLOGY, Atlantic City, N. J., Apr. 15-21. Dr. Cyrus C. Erickson, 874 Union Ave., Memphis 3, Tenn., Secretary.

AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, Atlantic City, N. J., Apr. 15-20. Dr. Carl C. Pfeiffer, Emory University School of Medicine, Emory University, Ga., Secretary.

AMERICAN SURGICAL ASSOCIATION, The Greenbrier, White Sulphur Springs, W. Va., Apr. 11-13. Dr. R. Kennedy Gilchrist, 59 East Madison St., Chicago 3, Secretary.

AMERICAN TRUDEAU SOCIETY, Hotel Statler, New York, May 21-25. Mr. Frank W. Webster, 1790 Broadway, New York 19, Executive Secretary.

AMERICAN UROLOGICAL ASSOCIATION, Hotel Statler, Boston, May 28-31. Dr. Samuel L. Raines, 188 South Bellevue Blvd., Memphis, Tenn., Secretary.

AMERICAN VENEREAL DISEASE ASSOCIATION, Department of Health, Education and Welfare, Washington, D. C., May 28-29. Dr. William L. Fleming, University of North Carolina, Chapel Hill, N. C., Acting Secretary.

ARIZONA MEDICAL ASSOCIATION, San Marcos Hotel, Chandler, Apr. 25-28. Dr. D. W. Melick, 411 Security Bldg., Phoenix, Secretary.

ARKANSAS MEDICAL SOCIETY, Hotel Marion and Robinson Auditorium, Little Rock, Apr. 23-25. Mr. Paul C. Schaefer, 213 Kelley Bldg., Ft. Smith, Executive Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS AND SURGEONS, Columbus, Ohio, Apr. 5-7. Dr. William L. Baughn, 1635 West 25th St., Anderson, Ind., Secretary.

CALIFORNIA MEDICAL ASSOCIATION, Ambassador Hotel, Los Angeles, April 29-May 2. Mr. John Hunton, 450 Sutter St., San Francisco 8, Executive Secretary.

CIVIL AVIATION MEDICAL ASSOCIATION, Drake Hotel, Chicago, April 14-16. Dr. Seymour Fiske, 150 East 71st St., New York 21, Secretary.

CONNECTICUT STATE MEDICAL SOCIETY, Hamden, Apr. 24-26. Dr. Creighton Barker, 160 St. Ronan St., New Haven, Executive Secretary.

FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, Chalfonte-Haddon Hall, Atlantic City, N. J., Apr. 16-20. Mr. M. O. Lee, 2101 Constitution Ave., Washington 25, D. C., Secretary.

FLORIDA MEDICAL ASSOCIATION, Hotel Fontainebleau, Miami Beach, May 13-16. Dr. Samuel M. Day, P.O. Box 1018, Jacksonville, Secretary.

GEORGIA, MEDICAL ASSOCIATION OF, Atlanta-Biltmore Hotel, Atlanta, May 13-16. Dr. David Henry Poer, 875 W. Peachtree St., Atlanta, Secretary.

HAWAII MEDICAL ASSOCIATION, Reef Hotel, Honolulu, Apr. 22-29. Dr. William S. Ito, 510 S. Beretania St., Honolulu, Secretary.

ILLINOIS STATE MEDICAL SOCIETY, Hotel Sherman, Chicago, May 15-18. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

INDUSTRIAL MEDICAL ASSOCIATION, Philadelphia, Apr. 23-26. Dr. H. Glenn Gardiner, Inland Steel Co., East Chicago, Ind., Secretary.

INTERNATIONAL ACADEMY OF PROCTOLOGY, Drake Hotel, Chicago, Apr. 23-26. Dr. Alfred J. Cantor, 43-55 Kissena Blvd., Flushing, N. Y., Secretary.

INTERSTATE ORTHOPEDIC SOCIETY, Pittsburgh, April 18. Dr. Harold H. Sankey, 121 University Place, Pittsburgh 13, Secretary.

IOWA STATE MEDICAL SOCIETY, Savery Hotel and Veterans Memorial Auditorium, Des Moines, Apr. 22-25. Mr. Donald L. Taylor, 529 36th St., Des Moines 12, Executive Secretary.

JOHN A. ANDREW CLINICAL SOCIETY, Memorial Hospital, Tuskegee Institute, Alabama, Apr. 8-13. Dr. Eugene H. Dibble Jr., John A. Andrew Memorial Hospital, Tuskegee Institute, Ala., Secretary.

KANSAS MEDICAL SOCIETY, Jayhawk Hotel, Topeka, April 29-May 3. Mr. Oliver E. Ebel, 315 West 4th St., Topeka, Executive Secretary.

LOUISIANA STATE MEDICAL SOCIETY, Hotel Bentley, Alexandria, Apr. 23-25. Dr. C. Grenes Cole, 1430 Tulane Ave., New Orleans 12, Secretary.

MARYLAND, MEDICAL AND CHIRURGICAL FACULTY OF THE STATE OF, Baltimore, May 2-4. Dr. Everett S. Diggs, 1211 Cathedral St., Baltimore 1, Secretary.

MASSACHUSETTS MEDICAL SOCIETY, Hotel Statler, Boston, May 22-24. Dr. Robert W. Buck, 22 The Fenway, Boston 15, Secretary.

MINNESOTA STATE MEDICAL ASSOCIATION, Hotel Kahler, Rochester, May 21-23. Mr. R. R. Rosell, 496 Lowry Medical Arts Bldg., St. Paul 2, Executive Secretary.

MISSISSIPPI STATE MEDICAL ASSOCIATION, Hotel Heidelberg, Jackson, May 8-10. Mr. Rowland B. Kennedy, 860 Milner Bldg., Jackson, Executive Secretary.

MISSOURI STATE MEDICAL ASSOCIATION, Hotel Jefferson, St. Louis, Apr. 8-11. Dr. E. Royse Bohrer, 634 North Grand Blvd., St. Louis 3, Secretary.

NATIONAL TUBERCULOSIS ASSOCIATION, Hotel Statler, New York, May 21-25. Dr. James E. Perkins, 1790 Broadway, New York 19, Managing Director.

NEBRASKA STATE MEDICAL ASSOCIATION, Hotel Cornhusker, Lincoln, May 14-17. Dr. R. B. Adams, 1315 Sharp Bldg., Lincoln 8, Secretary.

NEW ENGLAND HEALTH EDUCATION ASSOCIATION, University of Connecticut, Storrs, Conn., May 11-12. Miss Wyntha Tompkins, Middlesex Health Association, Essex, Mass., Secretary.

NEW JERSEY, MEDICAL SOCIETY OF, Haddon Hall, Atlantic City, May 13-16. Dr. Marcus H. Greifinger, 315 West State St., Trenton 8, Secretary.

NEW MEXICO MEDICAL SOCIETY, Roswell Senior High School, Roswell, May 2-4. Mr. Ralph R. Marshall, 221 West Central Ave., Albuquerque, Secretary.

NEW YORK, MEDICAL SOCIETY OF THE STATE OF, Hotel Statler, New York, May 7-11. Dr. Walter P. Anderton, 386 Fourth Ave., New York 16, Secretary.

NORTH CAROLINA, MEDICAL SOCIETY OF THE STATE OF, Hotel Carolina, Pinehurst, April 30-May 2. Dr. Millard D. Hill, 203 Capitol Bldg., Raleigh, Secretary.

OGDEN SURGICAL SOCIETY, Ogden Theater, Ogden, Utah, May 23-25. Dr. Wendell J. Thomson, 2404 Washington Ave., Ogden, Utah, President.

OHIO STATE MEDICAL ASSOCIATION, Cleveland, Apr. 10-13. Mr. Charles S. Nelson, 79 East State St., Columbus 15, Executive Secretary.

OHIO STATE RADIOLOGICAL SOCIETY, Deshler-Hilton Hotel, Columbus, May 11-13. Dr. John R. Hannan, 10515 Carnegie Ave., Cleveland 6, Secretary.

OKLAHOMA STATE MEDICAL ASSOCIATION, Municipal Auditorium, Oklahoma City, May 6-9. Mr. R. H. Graham, 1227 Classen Drive, Oklahoma City, Executive Secretary.

REGIONAL MEETINGS:

AMERICAN COLLEGE OF GASTROENTEROLOGY:

New Orleans, Auditorium, Louisiana State University, April 8. Mr. Daniel Weiss, 33 West 60th St., New York 23, Executive Secretary.

AMERICAN COLLEGE OF SURGEONS:

Edmonton, Alberta, Canada, The Macdonald, Apr. 23-25. Dr. J. Rose Vant, 10113, 104th St., Edmonton, Alberta, Canada, Chairman.

U. S. SECTION, INTERNATIONAL COLLEGE OF SURGEONS:

Madison, Wis., Loraine Hotel, April 26-28. Dr. Arnold S. Jackson, Jackson Clinic, Madison, Wis., Chairman.

Chattanooga, Tenn., Read House, April 30-May 1. Dr. William G. Stephenson, 546 McCallie Ave., Chattanooga 3, Tenn., Chairman.

Niagara Falls, Ontario, Canada, General Brock Hotel, June 1-2. Dr. William Gillick, 644 Park Place, Niagara Falls, N. Y., Chairman.

RHODE ISLAND MEDICAL SOCIETY, Rhode Island Medical Society Library, Providence, May 1-3. Dr. Thomas Perry Jr., 106 Francis St., Providence 3, Secretary.

SOCIETY OF AMERICAN BACTERIOLOGISTS, Shamrock Hotel, Houston, Tex., May 29-June 3. Dr. John Hays Bailey, Sterling-Winthrop Research Institute, Rensselaer, N. Y., Secretary.

SOCIETY OF BIOLOGICAL PSYCHIATRY, Morrison Hotel, Chicago, Apr. 28-29. Dr. George N. Thompson, 2010 Wilshire Blvd., Los Angeles 5, Secretary.

SOCIETY OF NEUROLOGICAL SURGEONS, Memphis, Tenn., May 7-8. Dr. Bronson S. Ray, 525 East 68th St., New York 21, Secretary.

SOCIETY FOR PEDIATRIC RESEARCH, The Inn, Buck Hill Falls, Pa., May 6-11. Dr. Sydney S. Gellis, 330 Brookline Ave., Boston 15, Secretary.

SOUTH CAROLINA MEDICAL ASSOCIATION, Ocean Forest Hotel, Myrtle Beach, May 15-17. Dr. Robert Wilson, 165 Rutledge Ave., Charleston, Secretary.

SOUTHERN OREGON MEDICAL SOCIETY, Klamath Falls, May 9. Dr. Calvin Hunt, 1842 Esplanade St., Klamath Falls, Secretary.

SOUTHWESTERN SURGICAL CONGRESS, Pioneer Hotel, Tucson, Ariz., Apr. 16-18. Dr. C. M. O'Leary, 207 Plaza Court Bldg., Oklahoma City, Secretary.

STUDENT AMERICAN MEDICAL ASSOCIATION, Hotel Sherman, Chicago, May 4-6. Mr. Russell F. Staudacher, 510 North Dearborn St., Chicago 10, Executive Secretary.

SYMPOSIUM ON PEDIATRICS, Salt Lake City, Apr. 12-13. Dr. F. Willis Taylor, 1265 West 4th North, Salt Lake City 16, Chairman.

TENNESSEE STATE MEDICAL ASSOCIATION, Peabody Hotel, Memphis, Apr. 8-11. Dr. R. H. Kampmeier, 112 Louise Ave., Nashville 5, Secretary.

TEXAS MEDICAL ASSOCIATION, Galveston, Apr. 21-25. Mr. C. Lincoln Williston, 1801 N. Lamar Blvd., Austin, Executive Secretary.

THE CONSTANTINIAN SOCIETY, Del Monte Lodge, Pebble Beach, Calif., Apr. 11-14. Dr. C. F. Shook, P. O. Box 1035-36, Toledo 1, Ohio, Secretary.

UNITED STATES-MEXICO BORDER PUBLIC HEALTH ASSOCIATION, Mexicali, Baja Calif., and Calexico, Calif., Apr. 13-16. Dr. Sidney B. Clark, 204 U. S. Court House, El Paso, Texas, Secretary.

WESTERN BRANCH, American Public Health Association, Salt Lake City, May 30-June 2. Mrs. L. Amy Darter, Division of Laboratories, State Department of Public Health, 2180 Milvia St., Berkeley, Calif., Secretary.

WESTERN INDUSTRIAL MEDICAL ASSOCIATION, Hotel Ambassador, Los Angeles, Apr. 28. Dr. Edward J. Zaik, 740 S. Olive St., Room 220, Los Angeles 14, Secretary.

WESTERN SECTION, AMERICAN UROLOGICAL ASSOCIATION, Sheraton-Palace Hotel, San Francisco, April 30-May 3. Dr. James Ownby Jr., 516 Sutter St., San Francisco, Chairman.

WISCONSIN, STATE MEDICAL SOCIETY OF, Hotel Schroeder, Milwaukee, May 1-3. Mr. Charles H. Crownhart, 330 East Lakeside St., Madison 1, Secretary.

FOREIGN AND INTERNATIONAL

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS, London School of Hygiene and Tropical Medicine, London W.C.1, England, Sept. 24-28, 1956. Dr. J. A. A. Mekelburg, Peek, Frean and Company, Ltd., Keetons Rd., Bermondsey, London, S.E.16, England, Honorable Secretary.

BRITISH MEDICAL ASSOCIATION, Brighton, England, July 9-13, 1956. Dr. Angus Macrae, B. M. A. House, Tavistock Square, London, W.C.1, England.

CANADIAN MEDICAL ASSOCIATION, Quebec, P. Q., Canada, June 10-14, 1956. Dr. Arthur D. Kelly, 150 St. George St., Toronto 5, Ont., Canada, Secretary.

CONFERENCE OF INTERNATIONAL UNION FOR HEALTH EDUCATION OF THE PUBLIC, Rome, Italy, April 27-May 5, 1956. Mr. Lucien Viborel, 92 rue St. Denis, Paris 1er, France, Secretary-General.

CONGRESS OF FRENCH SOCIETY OF OPHTHALMOLOGY, Paris, France, May 6-10, 1956. Dr. Marcel Kalt, 81 rue Saint-Lazare, Paris 9e, France, Secretary.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Miami Beach, Fla., U.S.A., April 9-12, 1956. For information write: Mrs. L. McMechan, 318 Hotel West Lake, Rocky River, Ohio, U. S. A.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LIMNOLOGY, Helsinki, Finland, July 26-Aug. 7, 1956. For information address: Dr. H. Luther, Snellmansgatan 16 C 36, Helsinki, Finland.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LOGOPEDICS AND PHONIATRICS, Barcelona, Spain, Sept. 3-7, 1956. Dr. J. Perello, Provenza 319, Barcelona 9, Spain, Secretary-General.

CONGRESS OF INTERNATIONAL SOCIETY OF HEMATOLOGY, Hotel Somerset, Boston, Mass., U.S.A., Aug. 27-Sept. 1, 1956. Dr. W. C. Moloney, 39 Bay State Road, Boston, Mass., U.S.A., Secretary.

CONGRESS OF INTERNATIONAL UNION AGAINST TUBERCULOSIS, New Delhi, India, Jan. 3-6, 1957. For information address: Secretariat, The Union, 66 Boulevard Saint-Michel, Paris 6e, France.

CONGRESS OF LATIN SOCIETY OF OPHTHALMOLOGY, Madrid, Spain, April 24-28, 1956. For information address: Dr. Costi, Montalban 3, Madrid, Spain.

EUROPEAN CONGRESS OF ALLERGOLOGY, Florence, Italy, Sept. 12-15, 1956. Prof. Umberto Serafini, Instituto de Patologia Medica, Viale Morgagni, Florence, Italy, Secretary-General.

EUROPEAN CONGRESS OF CARDIOLOGY, Stockholm, Sweden, Sept. 10-14, 1956. Dr. Karl Erik Grewin, Sodersjukhuset, Stockholm, Sweden, General Secretary.

EUROPEAN SYMPOSIUM ON VITAMIN B_{12}, Hamburg, Germany, May 22-26, 1956. For information write: Doz. Dr. H. Bauer, Nervenklinik, Hamburg-Eppendorf, Germany.

HEALTH CONGRESS, ROYAL SOCIETY FOR THE PROMOTION OF HEALTH, Blackpool, England, April 24-27, 1956. Mr. P. Arthur Wells, 90 Buckingham Palace Road, London S.W. 1, England, Secretary.

INTER-AMERICAN CONGRESS OF CARDIOLOGY, Havana, Cuba, Nov. 11-17, 1956. For information address: Dr. Ramon Aixala, Apartado 2108, Havana, Cuba.

INTER-AMERICAN CONGRESS OF PAN AMERICAN MEDICAL ASSOCIATION, Mexico City, Mexico, April 15-21, 1957. Dr. Joseph J. Eller, 745 Fifth Ave., New York 22, N. Y., U. S. A., Executive Director.

INTERNATIONAL ACADEMY OF PATHOLOGY, Cincinnati, Ohio, U. S. A., April 24-25, 1956. Dr. F. K. Mostofi, Armed Forces Institute of Pathology, Washington 25, D. C., U. S. A., Secretary.

INTERNATIONAL CONGRESS AGAINST ALCOHOLISM, Istanbul, Turkey, Sept. 10-15, 1956. For information address: International contre l'Alcoolisme, Case Gare 49, Lausanne, Switzerland.

INTERNATIONAL CONGRESS ON ANIMAL REPRODUCTION, Arts School, University of Cambridge, Cambridge, England, June 25-30, 1956. Dr. Joseph Edwards, Production Division, Milk Marketing Board, Thames Ditton, Surrey, England, Hon. Secretary.

INTERNATIONAL CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES, Philadelphia, Pa., U. S. A., Sept. 2-9, 1956. Dr. William N. Fenton, National Research Council, Division of Anthropology and Psychology, 2101 Constitution Avenue, Washington 25, D. C., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF DIETETICS, Congress Palace, Esposizione Universale Roma, Rome, Italy, Sept. 10-14, 1956. Prof. E. Serianni, Associazione Dietetica, Italiana, via dei Penitenzieri N. 13, Rome, Italy, Secretary General.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Cologne, Germany, Aug. 19-23, 1956. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, U. S. A., Executive Director.

INTERNATIONAL CONGRESS OF ENTOMOLOGY, Montreal, Canada, Aug. 17-25, 1956. Mr. J. A. Downes, Science Service Bldg., Carling Ave., Ottawa, Ont., Canada, Secretary.

INTERNATIONAL CONGRESS OF GASTROENTEROLOGY, London, England, July 18-21, 1956. Mr. Hermon Taylor, London Hospital, White Chapel, London E.1, England, Honorable Secretary.

INTERNATIONAL CONGRESS OF HEALTH TECHNICIANS, Maison de la Mutualite, Paris, France, June 5-8, 1956. For information address: Mr. M. H. Thoillier, 37 Rue de Monthlon, Paris 9e, France.

INTERNATIONAL CONGRESS FOR THE HISTORY OF SCIENCE, Florence and Milan, Italy, Sept. 3-10, 1956. Dr. M. L. Bonelli, Instituto di Ottica, Arcetri, Florence, Italy, Secretary-General.

INTERNATIONAL CONGRESS OF HUMAN GENETICS, Copenhagen, Denmark, Aug. 1-6, 1956. For information address: The University Institute for Human Genetics, Tagensvej 14, Copenhagen N, Denmark.

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Athens, Greece, Sept. 14-18, 1956. Prof. B. Kourias, Croix-Rouge Hellenique, 1 rue Mackenzie King, Athens, Greece, Secretary-General.

INTERNATIONAL CONGRESS ON INFECTIOUS PATHOLOGY, Lyon, France, May 24-26, 1956. General Secretariat: Institut Pasteur de Lyon, 77 rue Pasteur, Lyon, France.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Madrid, Spain, Sept. 19-23, 1956. Dr. J. C. De Oya and Dr. J. Gimena, Hostaleza No. 90, Madrid, Spain, Secretaries.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Palmer House, Chicago, Illinois, U. S. A., Sept. 9-13, 1956. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL CONGRESS ON MEDICAL RECORDS, Shoreham Hotel, Washington, D. C., U. S. A., Oct. 1-5, 1956. For information address: Miss Doris Gleason, Executive Director, American Association of Medical Record Librarians, 510 North Dearborn St., Chicago 10, Illinois, U. S. A.

INTERNATIONAL CONGRESS OF NEO-HIPPOCRATIC MEDICINE, Montecatini, Terme, Italy, May 20-22, 1956. Dr. Valente, 41 Avenue Verdi, Montecatini Terme, Italy, Secretary-General.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Copenhagen, Denmark, July 22-27, 1956. Professor P. Plum, Rigshospitalet, Copenhagen, Denmark, President.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, Copenhagen, Denmark, August 20-24, 1956. Dr. B. Strandberg, Kobenhavns amts sygehus i Gentofte, Dept. of Rheumatology and Physical Medicine, Hellerup, Denmark, Honorable Secretary.

INTERNATIONAL CONGRESS OF RADIOLOGY, Mexico, D. F., Mexico, July 22-28, 1956. Dr. Jose Noriega, Tepic 126 (2e piso), Mexico, D. F. 7, Mexico, Secretary General.

INTERNATIONAL CONGRESS OF WORLD CONFEDERATION FOR PHYSICAL THERAPY, Hotel Statler, New York, New York, U. S. A., June 17-23, 1956. For information address: Miss Mildred Elson, American Physical Therapy Association, 1790 Broadway, New York 19, New York, U. S. A.

INTERNATIONAL GENETICS SYMPOSIUM, Tokyo and Kyoto, Japan, Sept. 6-12, 1956. For information address: Secretary, International Genetics Symposium, Science Council of Japan, Ueno Park, Tokyo, Japan.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Brussels, Belgium, July 29-Aug. 5, 1956. For information address: Prof. J. Reuse, Faculte de Medicine et de Pharmacie, 115 Boulevard de Waterloo, Brussels, Belgium.

INTERNATIONAL PROFESSIONAL UNION OF GYNECOLOGISTS AND OBSTETRICIANS, Madrid, Spain, Sept. 28-29, 1956. Dr. Jacques Courtois, 1 rue Racine, St-Germain-en-Laye (S and O), France, Permanent International Secretary-General.

INTERNATIONAL SYMPOSIUM ON DIENCEFALON, Musec della Scienza e della Tecnica, Piazza S. Vittorre 21, Milan, Italy, May 3-5, 1956. Drs. S. Curri and L. Martini, Instituto di Farmacologia, Universita di Milano, via Andre del Sarto 21, Milan, Italy, Secretaries.

INTERNATIONAL SYMPOSIUM ON VENEREAL DISEASES AND THE TREPONEMATOSES, Hotel Statler, Washington, D. C., U. S. A., May 28-June 1, 1956. For information address: Dr. Charles A. Smith, Chief, Venereal Disease Program, Division of Special Health Services, Public Health Service, Dept. of Health, Education and Welfare, Washington 25, D. C., U. S. A.

LATIN AMERICAN CHAPTER, INTERNATIONAL SOCIETY OF ANGIOLOGY, Havana, Cuba, Nov. 8-11, 1956. Dr. Armando Nuñez Nuñez, 25 No. 510 Vedado, Havana, Cuba, President.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION, EXTRAORDINARY GENERAL ASSEMBLY, Burgenstock, Nidwalden, Switzerland, Sept. 21-24, 1956. Dr. Janet Aitken, 30a Acacia Road, London N.W. 1, England, Secretary.

NATIONAL CONGRESS OF PEDIATRICS, Cuidad Universitaria, Mexico D.F., Mexico, May 1-5, 1956. Dr. Ignacio Avila Cisneros, Calzada de Madereros No. 240, Mexico 18, D.F., Mexico, Coordinator.

NORTH QUEENSLAND MEDICAL CONFERENCE, Cairns, North Queensland, Australia, June 25-30, 1956. Dr. W. R. Horsfall, P.O Box 672, Cairns, N.Q., Australia, Secretary.

PAN AMERICAN CONGRESS ON CANCER CYTOLOGY, Eden Roc Hotel, Miami Beach, Fla., U. S. A., April 25-29, 1957. Dr. J. Ernest Ayre, 1155 N.W. 14th St., Miami, Fla. U. S. A., General Chairman.

PAN AMERICAN CONGRESS OF GERONTOLOGY, Mexico, D. F., Mexico, Sept. 7-15, 1956. Dr. Manuel Payno, Avenue Cuahtemoc No. 10-3, Mexico 7, D. F., Mexico, Presidente.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, San Juan, Puerto Rico, April 8-12, 1956. Dr. C. E. Munoz MacCormick, Apartado 9111, Santurce 29, Puerto Rico, Secretary General.

PAN AMERICAN TUBERCULOSIS CONGRESS, Medellin and Bogota, Columbia, South America, Aug. 1-15, 1956. General Secretary, 26 de Marzo 1065, Montevideo, Uruguay.

WORLD CONGRESS ON FERTILITY AND STERILITY, Naples, Italy, May 18-24, 1956. Dr. Maxwell Roland, 114-20 Queens Boulevard, Forest Hills 75, New York, N. Y., U. S. A., Chairman, Liaison Committee.

WORLD FEDERATION FOR MENTAL HEALTH, Munich, Germany, Aug. 12-18, 1956. Secretariat, 19 Manchester Street, London W.1, England.

WORLD MEDICAL ASSOCIATION, Havana, Cuba, Oct. 9-15, 1956. Dr. Louis H. Bauer, 345 East 46th St., New York 17, New York, U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Various Centers. April 24-25 (Part II); June 19-20 (Parts I and II); September 4-5 (Part I). Candidates may file applications at any time but they must be received at least six weeks before the date of the examination for which application is made. New candidates should apply by formal registration; registered candidates may notify the board, indicating desired location, date and candidate number. Ex. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 19-21. Sec., Dr. D. G. Gill, State Office Bldg., Montgomery.

ARIZONA:* *Examination.* Phoenix, April 18. *Reciprocity.* Phoenix, April 21. Exec. Sec., Mr. Robert Carpenter, 541 Security Bldg., Phoenix.

ARKANSAS:* *Examination.* Little Rock, June 14-15. Sec., Dr. Joe Verser, Harrisburg.

COLORADO:* *Endorsement.* Denver, April 10. Final date for filing application was March 12. *Examination.* Denver, June 12-13. Exec. Sec., Miss Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

DELAWARE: *Examination.* Dover, July 10-12. *Reciprocity.* Dover, July 19. Sec., Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA:* *Examination.* Washington, May 14-15. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave., N.W., Washington.

FLORIDA:* *Examination.* Miami Beach, June 24-26. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami 36.

GEORGIA: *Examination and Reciprocity.* Atlanta, June. Sec., Mr. Cecil L. Clifton, 111 State Capitol, Atlanta 3.

IDAHO: *Examination, Reciprocity and Endorsement.* Boise, July 9-11. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: *Examination and Reciprocity.* Chicago, June 19-21 and Oct. 9-11. Supt. of Regis., Mr. Frederic B. Selcke, Capitol Building, Springfield.

INDIANA: *Examination.* Indianapolis, June. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

IOWA:* *Reciprocity.* Des Moines, April 23. *Examination.* Iowa City, June 11-13. Exec. Sec., Mr. Ronald V. Saf, 310 Bankers Trust Bldg., Des Moines.

KANSAS: *Examination and Reciprocity.* Kansas City, June 6-7. Sec., Dr. Lyle F. Schmaus, 872 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 4-6. Sec., Dr. Russell E. Teague, 620 S. Third St., Louisville 2.

LOUISIANA: *Homeopathic.* Subject to call. Sec., Dr. F. H. Hardenstein, 903 Pere Marquette Bldg., New Orleans 12.

MARYLAND: *Examination.* Baltimore, June 19-20. Sec., Dr. Lewis P. Gundry, 1211 Cathedral St., Baltimore.

MARYLAND: *Homeopathic. Examination.* Havre de Grace, June 25-27. Sec., Dr. Robert H. Reddick, R.D. #2, Cambridge.

MASSACHUSETTS: *Examination.* Boston, July 10-13. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June 13-15. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., Lansing.

MINNESOTA:* *Examination and Reciprocity.* Minneapolis, June 12-14. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Examination.* Jackson, June 25-26. *Reciprocity.* Jackson, June 27. Asst. Sec., Dr. R. N. Whitfield, Old Capitol, Jackson.

MISSOURI: *Examination.* St. Louis, May 30-31 and June 4-5. Exec. Sec., Mr. John A. Hailey, State Capitol Bldg., Box 4, Jefferson City.

NEBRASKA:* *Examination.* Omaha, June 18-20. Director, Bureau of Examining Boards, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEW JERSEY: *Examination.* Trenton, June 19-22. Sec., Dr. Patrick H. Corrigan, 28 W. State St., Trenton.

NEW MEXICO:* *Examination and Endorsement.* Santa Fe, May 21-22. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NORTH CAROLINA: *Endorsement.* Pinehurst, April 30. *Examination.* Raleigh, June 18-21. Sec., Dr. Joseph J. Combs, Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, July 11-13. *Reciprocity and Endorsement.* Grand Forks, July 14. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, June 14-16. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA:* *Examination.* Oklahoma City, June 5-6. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

OREGON:* *Reciprocity.* Portland, Apr. 12-14. *Examination.* Portland, July. Ex. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July 9-12. Acting Sec., Mrs. Margaret G. Steiner, Box 911, Harrisburg.

SOUTH CAROLINA: *Reciprocity.* Myrtle Beach, May 15. *Examination.* Columbia, June 25-26. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Custer, July 17-19. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS:* *Examination and Reciprocity.* Fort Worth, June 18-20. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, July 11-13. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VIRGINIA: *Reciprocity.* Richmond, June 13. *Examination.* Richmond, June 14-16. Address, Board of Medical Examiners, 631 First St., S.W., Roanoke.

WASHINGTON:* *Endorsement.* Seattle, July 15. *Examination.* Seattle, July 16-18. Sec., Mr. Edward C. Dohm, Olympia.

WEST VIRGINIA: *Examination.* Charleston, July. *Reciprocity.* Charleston, April 23. SEC., Dr. N. H. Dyer, State Office Bldg. No. 3, Charleston.

WISCONSIN:* *Reciprocity,* Madison, Spring; *Reciprocity and Examination.* Milwaukee, July 10-12. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., Madison.

WYOMING: *Examination and Reciprocity.* Cheyenne, June 4. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

ALASKA:* On application in Anchorage, Fairbanks, Juneau and other towns. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

HAWAII: *Examination.* Honolulu, July 9-10. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

VIRGIN ISLANDS: *Examination and Endorsement.* Charlotte Amalie, June 13-14. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARKANSAS: *Examination.* Little Rock, May 4-5. Sec., Mr. S. C. Dellinger, Zoology Department, University of Arkansas, Fayetteville.

COLORADO: *Examination and Reciprocity.* Denver, May 2-3. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

DISTRICT OF COLUMBIA: *Examination.* Washington, April 23-24. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave. N.W., Washington 6.

FLORIDA: *Examination.* Miami, June 9. Sec., Mr. M. W. Emmel, Box 340, Gainesville.

IOWA: *Examination and Reciprocity.* Des Moines, April 10. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

OREGON: *Examination.* Portland, June 2, Sept. 8 and Dec. 1. Dr. Earl M. Pallett, Sec., State Board of Higher Education, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, June 8-9. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TEXAS: *Examination.* Austin, Galveston and Houston, April 13-14. Sec., Bro. Raphael Wilson, 407 Perry-Brooks Bldg., Austin.

WASHINGTON: *Reciprocity.* Seattle, July 10. *Examination.* Seattle, July 11-12. Sec., Mr. Edward C. Dohm, Olympia.

WISCONSIN: *Examination.* Milwaukee, June 2. Final date for filing application was Mar. 30. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

ALASKA: *Examination and Reciprocity.* Anchorage and Juneau, first week of February, April, June, August and November. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

*Basic Science Certificate required.

MAGAZINE–TELEVISION REPORT

The following list of current medical articles in mass-circulation magazines and forthcoming network television programs on medical subjects is published each week only for the information of readers of THE JOURNAL. *Unless specifically stated, the American Medical Association neither approves nor disapproves of the articles and programs reported.*

TELEVISION

Monday, April 16

NBC-TV, 11 a. m. - noon EST. "Medical and Health News with Howard Whitman," a segment of the "Home" program.

NBC-TV, 9 p. m. EST. "Medic" presents "The Inconstant Heart" on the subject of radiology.

MAGAZINES

Saturday Evening Post, March 31, 1956

"In Search of Medical Miracles," by Milton Lehman

The National Institutes of Health in Bethesda, Md., is "the headquarters of man's modern quest for healing powers." According to the article, "the purpose of this hospital wonderland is not the care and treatment of patients, but the study of what ails them."

Saturday Evening Post, April 7, 1956

"They Repair Damaged Hearts," by Steven M. Spencer

A report on heart surgery performed at Peter Bent Brigham Hospital in Philadelphia.

The American Weekly, April 8, 1956

"Boy or Girl," by William Engle

Dr. Landrum B. Shettles of the College of Physicians and Surgeons, New York, predicts the sex of an unborn child by examining the fluid that surrounds the baby in its mother's womb.

Parade, April 8, 1956

"New Ways to Help Crippled Children," by Robert P. Goldman

"More and more disabled youngsters are learning to live actively and usefully via modern rehabilitation." Pictures accompanying the article show how three New York institutions are helping crippled children become self-sufficient.

The Reader's Digest, April, 1956

"A New Weapon Against the Threat of Blindness," by Paul de Kruif

"Within three years' time a chemical designed to aid failing hearts is on the way to saving thousands from lifelong darkness." In an article condensed from *Today's Health,* Mr. de Kruif reports on the use of Diamox to control chronic simple glaucoma.

Ladies' Home Journal, April, 1956

"How to Find a Doctor in a Hurry," by Peter Briggs

This brief feature says, "promoted by the American Medical Association, doctors' emergency services have been established in more than 680 communities. . . . It is a good precaution to have the phone number of your Doctors' Emergency Service handy for the unexpected time when it may be needed."

The American Magazine, April, 1956

"Why I Want Salk Shots for My Child," by Jane Krieger

A writer who has followed the Salk vaccine story since it was announced a year ago reports that new manufacturing methods make the vaccine much safer than it was originally.

Woman's Home Companion, April, 1956

"Food for Your Heart," by Frederick J. Stare, M.D., and Paul Dudley White, M.D.

Two Harvard University physicians join in recommending good nutrition, regular medical checkups, and support of education and scientific and medical research as ways "to provide maximum resistance to diseases of the heart."

DEATHS

Felts, Harvey Austin ✠ Marion, Ill.; Northwestern University Medical School, Chicago, 1913; past-president and secretary of the Williamson County Medical Society; past-president, vice-president, and secretary of the Southern Illinois Medical Society; second vice-president of the Illinois State Medical Society, 1949-1950; served during World War I; on the staff of the Marion Memorial Hospital, where he died Jan. 7, aged 70, of myocardial infarction.

Finnegan, William Francis ✠ Lebanon, Pa.; Tufts College Medical School, Boston, 1928; served during World War II; died in the Harrisburg (Pa.) General Hospital Jan. 4, aged 51, of coronary disease.

Finney, Charles Herman ✠ Kansas City, Mo.; St. Louis University School of Medicine, 1931; served during World War II; on the staff of the regional office of the Veterans Administration; died Dec. 2, aged 48, of acute coronary thrombosis.

Glueck, Josephine M. Stransky, Briarcliff Manor, N. Y.; Woman's Medical College of Baltimore, 1908; at one time associated with Stony Lodge in Ossining; died in the Doctor's Hospital, Washington, D. C., Jan. 13, aged 69, of cerebrovascular accident.

Greenwell, Waldron Eugene ✠ Great Bend, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1940; formerly on the staff of the Binghamton City Hospital, where he served an internship, and Our Lady of Lourdes Memorial Hospital in Binghamton; served during World War II; died in Philadelphia Nov. 16, aged 41, of coronary thrombosis.

Gubin, Sydney ✠ Memphis, Tenn.; New York Homeopathic Medical College and Flower Hospital, New York City, 1921; served during World Wars I and II; associated with the Veterans Administration Hospital, where he died Dec. 19, aged 66, of arteriosclerotic heart disease.

Harrison, Benjamin Irving ✠ Knoxville, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1913; fellow of the American College of Surgeons; served during World War I; on the staffs of the East Tennessee Baptist Hospital, St. Mary's Memorial Hospital, and the Fort Sanders Presbyterian Hospital, where he died Jan. 29, aged 64, of hemorrhage from esophageal varices.

Horn, Thomas Van, Edinburg, Miss.; Memphis (Tenn.) Hospital Medical College, 1912; died in the Mississippi Baptist Hospital, Jackson, Jan. 23, aged 71, of aplastic anemia, myocardial hypertrophy, and bronchiectasis.

Koebig, Walter Christian S., South Pasadena, Calif.; College of Physicians and Surgeons, Los Angeles, 1910; fellow of the American College of Surgeons; died Nov. 30, aged 71, of injuries received in an automobile accident.

Lever, Haseltine Smith, Jr. ✠ Bay Pines, Fla.; Hahnemann Medical College and Hospital of Philadelphia, 1930; served during World War II; admitting physician, Veterans Administration Center; died Nov. 10, aged 53, of coronary sclerosis.

Parker, B. Morgan ✠ Utica, Mich.; Michigan College of Medicine and Surgery, Detroit, 1901; died in St. Joseph Hospital in Mount Clemens Dec. 15, aged 75, of chronic myocarditis.

Patterson, Rex Arthur ✠ Ligonier, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1935; served during World War II; on the staff of the Latrobe (Pa.) Hospital; died Dec. 29, aged 50, of coronary occlusion.

Pearce, Claude Clifford, Mulberry, Fla.; Atlanta College of Physicians and Surgeons, 1907; an associate member of the American Medical Association; died in St. Joseph Hospital in Tampa Dec. 30, aged 77, of cerebral thrombosis and carcinoma of the prostate.

✠ Indicates Member of the American Medical Association.

Portnoy, Maurice, New Bedford, Mass.; Tufts College Medical School, Boston, 1921; member of the Massachusetts Medical Society; died in Jacksonville, Fla., Dec. 21, aged 57, of fourth degree burns.

Richardson, Ethyl Harriet, Quincy, Ill.; American Medical College, St. Louis, 1899; died in the Blessing Hospital Jan. 21, aged 76, of arterial embolism.

Ross, Almon Bartlett ✠ Los Angeles; Cooper Medical College, San Francisco, 1907; served on the staff of the California Hospital; died Jan. 16, aged 74.

Ross, Pren James, Grant City, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1915; member of the Missouri State Medical Association; served during World War I; died Jan. 3, aged 67, of cerebral embolism.

Schmidt, Alfred Richard C., Wheeling, W. Va.; Chicago College of Medicine and Surgery, 1913; also a graduate of a school of law; for many years served as medical director for the Baltimore and Ohio Railroad Company in the Wheeling area; died Jan. 24, aged 67, of arteriosclerotic heart disease.

Stroupe, Henry Van Hoozer ✠ senior surgeon, U. S. Public Health Service, retired, Bogalusa, La.; University of Arkansas School of Medicine, Little Rock, 1919; in 1916 served with the Arkansas National Guard in the Mexican campaign; veteran of World Wars I and II; affiliated with the U. S. Public Health Service from 1926 to 1952, when he retired; served as director of the Washington Parish Health Unit; died in the U. S. Public Health Service Hospital in New Orleans Jan. 29, aged 59, of congestive heart disease.

Sullivan, Gerald Joseph, Worcester, Mass.; Georgetown University School of Medicine, Washington, D. C., 1935; interned at St. Vincent Hospital in Worcester; served in the U. S. Naval Reserve during World War II and held a presidential unit citation ribbon and the European theater ribbon with battle star; certified by the National Board of Medical Examiners; died in the Worcester City Hospital Jan. 12, aged 47, of bronchopneumonia and third degree burns received when a mattress caught fire in his room.

Thompson, Mary Fowler, Redlands, Calif.; Woman's Medical College, Chicago, 1889; at one time a medical missionary; died in San Bernardino Jan. 10, aged 91, of uremia and arteriosclerotic heart disease.

Tinker, Charles Lawrence ✠ New Philadelphia, Ohio; Eclectic Medical College, Cincinnati, 1909; at one time county health commissioner; an honorary life member of the medical staff at Union Hospital in Dover; died Jan. 14, aged 73, of bronchopneumonia and carcinoma of the lung.

Voss, Norwood Warner ✠ Wilmington, Del.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1916; died Feb. 17, aged 70.

Walshe, Joseph Aloysius ✠ Pasadena, Calif.; St. Louis University School of Medicine, 1937; fellow of the International College of Surgeons; certified by the National Board of Medical Examiners; interned at the New Rochelle (N. Y.) Hospital; served a residency at the Metropolitan Hospital, Welfare Island, N. Y.; on the staffs of Alta Vista and Collis P. and Howard Huntington Memorial hospitals; died in the Hospital of the Good Samaritan, Los Angeles, Jan. 17, aged 48, of pulmonary fibrosis.

Weber, Bernard Aloysius ✠ Olney, Ill.; St. Louis University School of Medicine, 1926; served during World War II; on the staff of the Richland Memorial Hospital; died in the Barnes Hospital, St. Louis, Jan. 27, aged 55.

White, Stanley Ray ✠ Bruceton Mills, W. Va.; University of Tennessee College of Medicine, Memphis, 1925; served during World War I; died in St. Francis Hospital, Pittsburgh, Feb. 19, aged 56.

FOREIGN LETTERS

AUSTRIA

Gastric Surgery.—The sixth Congress of Austrian Surgeons, the Austrian section of the International College of Surgeons, met in Vienna in October. Prof. F. Seelich, in his report on the ferments of the stomach and the duodenum and their significance in the forming of ulcers, pointed out that the lysozym titer in the gastric juice is twice as high in the patient with an ulcer as it is in the healthy person and that after vagotomy these levels, on an average, decrease by 44%. Other investigations have shown that the tissues surrounding peptic ulcers contain 50 to 200 times as much lysozym as do corresponding normal tissues. Lysozym may represent that factor that removes the physiological protection of the mucosa of the stomach. F. Spath of Graz said that, beside the end-to-end gastroduodenostomy (Billroth 1), the so-called terminolateral modification of the Billroth 1 operation is regularly performed in the surgical clinic of the University of Graz, in order to restrict the number of Billroth 2 resections required because of the low functional capacity (strict adherence to diet, loss of weight, cramps, and dumping syndrome) observed after the Billroth 2 operation. Of 1,010 resections for uncomplicated ulcers, 549 were of the Billroth 1 type (190 of these with terminolateral anastomosis). The mortality in this group was lower (2.1%) than in those who had other types of operations. The follow-up examinations of 507 patients with resections show the excellent functional results of the Billroth 1 operation, particularly of its terminolateral modification. In the more severe postgastrectomy syndrome observed after Billroth 2 resections and in failures of conservative medical treatment, even when associated with the most severe disturbances, a complete cure can be achieved by means of corrective operations through changing a Billroth 2 resection into a Billroth 1 type, with a terminolateral anastomosis.

R. Boller of Vienna said that a third of the patients who had a gastric resection suffered from gastric complaints after the operation if they were operated on within the first year of their ailments, whereas patients with ulcers of longer duration had better postoperative results. Treatment of various manifestations of diseases of the stomach that has been operated on consists of irrigation of the stomach, therapy with acetylcholine dehydrocholic acid for the dumping syndrome, substitution therapy, and, most particularly, diet. It is necessary for the patient with a resected stomach to maintain sufficient protein intake. Because of the loss of gastric function, the digestion of meat is severely impaired and, therefore, there is often a loss of protein in these patients, which cannot easily be compensated. Protein has to be taken in frequent small feedings primarily as animal protein. The less valuable vegetable proteins should not, however, be entirely excluded. The stronger the indication for operation, the more favorable the result of the operation. Attention should be drawn to the fact that in patients with old pulmonary tuberculosis a flare-up after resection of the stomach may result. H. Berger of Innsbruck reported that resection by Finsterer's technique (with removal of the pylorus) for deep-seated duodenal ulcers has proved very satisfactory. Actually, those ulcers situated near the cardia that cannot be radically resected by either a subtotal or "staircase" operation are rare. As a rule, resection of the cardia and gastrectomy are not advisable for ulcers. The endoscopic vagosympathectomy method of Kux in most patients spontaneously obviates subjective complaints in nonstenosed duodenal ulcers. No final opinion can be given concerning permanent cure.

A. Winkelbauer of Klagenfurt reported on his experience with the fundamental total gastrectomy. Within the past five years, 312 patients with carcinoma of the stomach were treated in his department. In 37, no operation was performed, and, in 91, a palliative or exploratory operation was done. Radical operations were performed on 27 (Billroth 2). In 22, subtotal resection and, in 135, total gastrectomies were performed (7 of the latter because of ulcer). The postoperative mortality was 4.1% for Billroth 2 operations and subtotal resections and 19.7% for total gastrectomies. The approach in 110 patients was abdominal, in 30 abdominothoracic, and in two thoracic. In 65 patients the spleen, in 32 parts of the pancreas (up to two-thirds), in 9 the transverse colon, and in 2 large parts of the diaphragm were removed in the same operation. Vitamin B_{12} and iron were given to prevent agastric anemia. F. Mandl of Vienna said that vagotomy is now used only in combination with gastroenterostomy or pyloroplasty in patients with duodenal ulcer and not in those with gastric ulcer. Of 333 patients who had vagotomies, with or without gastroenterostomy (during the early stages of this method), only 3 patients died (mortality 0.9%). Vagotomy is performed on patients with duodenal ulcer if it is difficult to resect the ulcer or if the patient is a poor risk. In ulcer of the stomach, vagotomy plus gastroenterostomy is used if the ulcer lies paraesophageally. Another indication is the presence of jejunal ulcer, regardless of whether it follows gastroenterostomy or resection. Recently, in resection of gastric ulcers, one-half of the stomach (not three-quarters) has been resected and vagotomy performed in order to prevent the complaints resulting from the reduced capacity of the stomach and to prevent relapse. Permanent results in duodenal ulcers treated by vagotomy plus gastroenterostomy have been obtained in 88.4% of these patients. Thus, vagotomy plus gastroenterostomy has a modest but secure position in the field of gastric surgery. I. J. Knoflach of Vienna reported that, whereas immediately after the war about 80% of perforated ulcers were sutured and resections were performed only if suturing was not possible or if stenosis was present, in the past few years primary resections were performed in almost 80% of patients with perforated ulcers. Of 93 patients with primary resections, only 2 died. The total mortality of 155 patients operated on in the past 10 years was 8%. The indications for a primary resection can, with caution, be widened substantially, and the patient can be spared the risk of a second operation.

R. Moritsch of Vienna stated that postoperative intestinal disturbances that, as a rule, were severe, but not fatal, occurred in 21% of the patients in the preantibiotic period but that, with the use of penicillin and streptomycin, they occur in only 2.6% of the patients whose stomachs are resected. These patients, however, show symptoms of catarrhal enterocolitis and their cases are more dangerous than the cases that were seen in the preantibiotic era. The patients show severe exsiccosis, and eventually a marked increase of residual nitrogen may occur. With reference to the genesis of this enterocolitis, in addition to superimposed infections and the role of resistant micrococci, an allergic factor may be present.

E. Ebner of St. Pölten reported that, in two patients, after resection of carcinoma of the esophagus, a Berman polyethylene prosthesis was used for bridging the defect in the thoracic portion. The lengths of the prostheses were 18 cm. and 16 cm. In both patients a pressure erosion occurred because of pressure on the upper edge of the tube. In the first patient it occurred because of pressure on the thoracic vertebrae, and, in the second, pressure led to necrosis of the wall of the aorta and to death by hemorrhage on the 34th postoperative day. The speaker believed the hard edge of the tube to be responsible for the pressure necrosis, primarily because of the rigidity of the Berman tube, which cannot accommodate itself to the movements of the spine. A tube that is flexible and has a soft end should give better results.

Blood Replacement.—At the same meeting, P. Fuchsig of Vienna stated that reactions occurred after erythrocytic transfusions in only 0.26% of 777 cases. By means of erythrocytic suspension, normal levels of hematocrit, hemoglobin, and erythrocytes can be economically achieved in a normal way and plasma can be saved for other purposes. Existing and threatening thromboses can be further considered as new indications, because the clot-

The items in these letters are contributed by regular correspondents in the various foreign countries.

ting potential in the recipient after cell transference is only slightly raised. R. Gottlob of Vienna said that the best results with intra-arterial blood transfusions were achieved in patients with shock caused by heavy loss of blood. Good results were also observed in patients who had a severe drop in blood pressure after operation for hypertension. Before intra-arterial transfusion, in all of the successful cases, no essential improvement could be achieved through intravenous transfusion or by treatment with arterenol. In order to avoid the possibility of eventual necrosis, suturing of the radial artery is recommended.

O. Novotny of Vienna said that in 22 laryngeal operations, the loss of blood had been measured. About 500 cc. was lost in laryngeal resections; 400 cc. in resections of cervical glands; and 350 cc. in sinus operations. The maximum quantity lost in a laryngeal operation was nearly 1,000 cc. Generally, it is not necessary to give whole blood transfusions in such operations. This view is substantiated by the fact that the plasma, protein, and hematocrit values, as shown by daily examinations, do not change substantially. Should shock occur during such an operation, an infusion of sodium chloride or dextrose solution is sufficient, but, whenever a larynx is resected and glands are removed at the same time, loss of blood often exceeds the danger point. Whole blood transfusion should, therefore, be given prior to such combined operations.

BRAZIL

Acute Conditions of Abdomen in Children.—Dr. Primo Curti (*Rev. paulista med.* **47**:387, 1955) reports a series of 280 children under the age of 13 with acute surgical conditions of the abdomen. The following clinical characteristics should be considered in the diagnosis and treatment of such conditions: 1. The pathological evolution is rapid, with early complications that aggravate the prognosis. 2. There is no parallelism between the clinical findings and the pathological process. 3. The tolerance to peritonitis with toxemia is slight, and the irreversible stage of shock is rapidly reached. 4. The resistance to hemorrhagic shock is slight. The author's series included 90 patients with acute appendicitis, 68 with intestinal obstruction due to ascariasis, 50 with acute intussusception, 44 with incarceration of an inguinal hernia, 10 with traumatic rupture of a parenchymatous abdominal viscus, 6 with intestinal atresia, 6 with atresia of the rectum and an imperforate anus, 3 with spontaneous intestinal perforation, and 3 with traumatic rupture of a hollow abdominal viscus. Pain was present in 91.9%, vomiting in 83.4%, tachycardia (pulse rate above 100 per minute) in 52.8%, palpable tumor in 52.1%, fever in 48.4%, fecal retention in 47.1%, abdominal distention in 41.9%, abdominal rigidity in 38.7%, distention with gas in 25.0%, mucosanguineous stools in 15.8%, visible peristalsis in 4.5%, and diarrhea in 1.4%.

The author recognized four syndromes: (1) the inflammatory (32.5%), most common in those of school age; (2) the obstructive (62.1%), most common in the first year of life; (3) the hemorrhagic (3.6%), usually associated with shock, and (4) the perforative (1.8%), characterized by signs of peritonitis. Pain, the most frequent symptom, occurred in these syndromes in the order listed, respectively, in 100.0, 85.6, 100.0, and 100.0% of the patients. Vomiting occurred in 73.6, 83.3, 50.0, and 100.0%. Tachycardia occurred in 58.2, 48.8, 70.0, and 50.0%; fever in 86.6, 32.1, 30.0, and 16.6%; fecal retention in 27.5, 59.1, 20.0, and 50.0%; abdominal distention in 15.3, 55.1, 40.0, and 66.6%; distention with gas in 9.8, 37.9, 30.0, and 50.0%; and abdominal rigidity in 89.0, 8.6, 90.0, and 100.0%. Palpable tumor and mucosanguineous stools were the predominant symptoms of the obstructive syndrome, occurring in 80.4 and 15.8% of the patients respectively.

Once the syndromic diagnosis is established, it is necessary to determine the exact cause in order to give appropriate treatment. The most frequent cause of the inflammatory syndrome was acute appendicitis; of the obstructive syndrome incarceration of an inguinal hernia, acute intussusception, intestinal obstruction due to ascariasis, congenital atresia of the small intestine, and congenital atresia of the rectum with an imperforate anus; of the perforative syndrome spontaneous and traumatic perforation of the gastrointestinal tract; and of the hemorrhagic syndrome traumatic rupture of a parenchymatous abdominal viscus. The commonest symptoms in order of frequency in patients with appendicitis were pain (100.0%), fever (86.6%), vomiting (73.6%), and tachycardia (58.2%); in patients with intussusception, vomiting (84%), pain (82%), tachycardia (72%), abdominal distention (60%), and retention of feces and gas (42%); in patients with intestinal obstruction due to ascariasis, pain, vomiting, and abdominal tumor (each 91.1%), fecal retention (66.1%), abdominal distention (50.0%), and tachycardia (44.1%); in patients with atresia of the small intestine and of the rectum with an imperforate anus, absence of elimination of meconium (100.0%) and vomiting and abdominal distention (each 91.6%); and in patients with rupture of an abdominal parenchymatous viscus, pain (100%), abdominal rigidity (90%), tachycardia (70%), and vomiting (50%). The sex ratio in this series was 1.8 boys to 1 girl. Appendicitis occurred predominantly in patients between 2 and 12 years of age; inguinal hernia between one month and 5 years; intussusception between 2 months and 5 years; intestinal obstruction due to ascariasis between 1 and 10 years; and traumatic perforations between 3 and 12 years.

FRANCE

WHO's Role in Protection from Atomic Radiation.—At a meeting of the World Health Organization executive board, Professor Parisot of France stated that peaceful uses of atomic energy had resulted in considering economic and industrial aspects to the point of neglecting health protection. Among important health problems are the location of atomic reactors and the disposal of radioactive wastes. It is easy to dispose of wastes in the soil, water, and air, but it is more difficult to predict what the wastes will eventually turn into and to find efficient means of preventing accidents. The WHO program on atomic energy includes: 1. Training of health personnel. Specially trained personnel will be needed to insure proper protective measures in atomic laboratories and plants, to supervise the disposal of radioactive waste and the location of reactors, and to use radioisotopes for diagnosis or treatment. A course for health physicists has been organized in Stockholm by the WHO regional office for Europe. 2. Provisions for the safe disposal of radioactive wastes. Fellowships and training facilities will be provided for this purpose. 3. Standardization of radiation units and radiation doses to encourage uniform codes of practice. In addition, pharmaceutical standards for modes of preparation and specific activities of radioisotopes for medical use will be needed. 4. Coordination of research on health aspects of radiation. Important knowledge of the operating principle can be obtained from animal experiments, but it is necessary to determine the extent to which the results obtained apply to man. 5. Collection and distribution of information on the medical problems of atomic energy and on the medical uses of radioisotopes. WHO has already published reprints of all the legislative texts in use throughout the world as regards protection from radiation.

Hormones for Thyrotoxicosis.—Decourt and his co-workers, in *Semaine des hôpitaux de Paris*, state that cortisone and corticotropin exert a favorable action on patients with thyrotoxicosis who are edematous. Corticotropin given intravenously seems to be the most effective treatment. Its action is inconstant, but occasionally spectacular, being evidenced within a few hours. Its effects are manifested especially on inflammatory signs such as edema, chemosis, and disturbances in ocular motility and less frequently on ocular protrusion, which, however, regresses markedly in some patients. Unfortunately, the treatment may aggravate the underlying hyperthyroidism. There is no relation between the degree of exophthalmos and that of hyperthyroidism. Severe edematous exophthalmos may be present in hypothyroid subjects or may develop after removal of the goiter or the use of antithyroid agents. The action of cortisone or corticotropin is usually transient. Discontinuance of the hormonotherapy may be rapidly followed by relapse of the exophthalmos, but its prolongation, on the contrary, may afford a definite and even durable improvement. The best results are obtained in exophthalmos of recent origin.

Death of Leriche.—Dr. René Leriche died on Dec. 29, 1955, in Cassis at the age of 76. He was at one time professor of surgery at Strasbourg, and during his life he had made several trips to the United States. He was a pioneer in neurological and vascular surgery. He made important contributions to the subject of nerve blocking and the treatment of cerebral vascular accidents by infiltration of the stellate ganglion. The syndrome of obliteration of the bifurcation of the aorta by arteritis and the operation periarterial sympathectomy bear his name. In 1955, he received the Prize for Medicine from Argentina.

New Journal.—The *Revue française d'études cliniques et biologiques* was launched in January. This journal will try to assemble the most important clinical and biological researches of France, Switzerland, and Belgium. The first issue contains among others an article by P. Burtin and his co-workers on the proteins of myelomas and by Hamburger and Richet on the artificial kidney.

IRELAND

Chemotherapy of Tuberculosis.—Dr. C. S. Breathnach has described the treatment of patients with active pulmonary tuberculosis with tablets containing 10 mg. of nicotinaldehyde thiosemicarbazone and 40 mg. of isoniazid (*Irish J. M. Sc.* **362:**79, 1956). This preparation, known as G.T.3, or Tebafen, was given to 10 patients with bacteriologically proved pulmonary tuberculosis and with clinical and radiological evidence of activity. Six tablets were given daily for three months. Five patients received in addition 1 gm. of streptomycin every third day. The average weight gain was 14 lb. (6.4 kg.), sedimentation rate fell in all patients but one, and sputum reversal occurred in four. Radiologically cavitary improvement seemed to be somewhat better than the infiltrative change. Patients receiving streptomycin did better than those receiving G.T.3 alone. One patient became resistant to the drug. The preliminary results were sufficiently promising to indicate the advisability of further clinical trials, particularly in conjunction with the intermittent streptomycin treatment.

Irish Health Act.—On March 1 the Minister of Health implemented the Health Act of 1953. Under this act certain of the services already available free to those in the lower-income group are now extended to the middle-income group. These services, which will be available free or at a reduced cost, include hospitalization and specialist services for those whose income is below $1,680 a year and, at the discretion of the health authority, those whose income is derived wholly or mainly from farming, the local tax value of the farm being under $140, and those who would suffer undue hardship. Maternity care and child welfare services until the infant is 6 weeks old are also available.

PERU

Pulmonary Cancer.—The incidence of pulmonary cancer is increasing, according to Dr. Carlos Peschiera of the National Institute of Neoplastic Diseases in an address before a meeting of the Peruvian Society of Tuberculosis in January. In a series of 167 patients with this disease, the ratio of men to women was 8:1. Most patients were between 50 and 70 years of age. The time lapse between the onset of symptoms and making the diagnosis was one to six months in 116 patients, seven months to one year in 40, one to two years in 8, and more than two years in one. The disease was accidentally discovered on routine x-ray examination in the two remaining patients, both of whom at that time were free of symptoms. Sixty-one patients complained of cough, 47 of thoracic pain, 38 of bloody sputum, 37 of weight loss, 32 of general distress, 12 of dyspnea, 7 of dysphonia, 3 of edema, and one of dysphagia. Eleven had fever of varying pattern. Seventy-one were found to have a resectable tumor, and the remaining 96 had inoperable cancers due to widespread metastases. The site of the primary lesion was the upper lobe of the right lung in 51 patients and of the left lung in 33. Radiographic study, bronchoscopy, and Papanicolaou's stain were the chief means of diagnosis. In this series, bronchoscopy was performed in 128 patients; in the rest, it was not used because the radiographic findings were conclusive. Cytological study of sputum specimens was made in 88 patients and revealed malignant cells in 45. Bronchial smears obtained during bronchoscopy revealed malignant cells in five more patients. Sixteen patients underwent single lobectomy, 48 pneumonectomy, and 15 exploratory thoracotomy. The therapeutic results cannot yet be assessed, but several patients have survived more than three years. Dr. Peschiera recommends irradiation before and after operation.

Tuberculosis.—At the symposium on infantile tuberculosis, sponsored by the Pediatrics Society and the Tuberculosis Society jointly in January, Dr. Cano Gironda said that during the period 1944 to 1948 the average death rate for tuberculosis in Peru was 450 for every 100,000 persons, whereas in the period 1949 to 1953 the rate was only 200. Tubercular meningitis, which in the earlier period had a case fatality rate of over 90%, in the later period had a rate of about 50%. Unfortunately, the general morbidity rates for tuberculosis have increased instead of diminishing, and the mortality and morbidity rates for infants are still very high. Positive tuberculin tests are found in about 30% of the children aged 0 to 5 years, those of the poorer classes having the highest percentage of positive tests. This is largely because funds and hospital beds are insufficient to provide care for the patients with open tuberculosis in many households where there are small children. About 50% of the children from 5 to 15 years of age and 80% of those over 15 years have a positive tuberculin test. Main reliance is being placed on campaigns of mass immunization with BCG vaccine and early detection of the disease in children. Where these measures are applied, there is evidence of a gratifying drop in the incidence of tuberculosis.

SWITZERLAND

Malignant Infectious Syndrome.—At a meeting of the Geneva Medical Society, Dr. Reilly of the French Academy of Medicine stated that the neurovegetative syndrome of infectious disease is characterized principally by generalized visceral vasodilatation. The symptoms of typhoid, for example, are due to a bacterial endotoxin. Reilly was able to reproduce the visceral lesions of the disease by placing the endotoxin in contact with the splanchnic nerve or the third or fourth ventricle. He also showed that the autonomic nervous system and its adjoining sensitive fibers react nonspecifically to a variety of stimulants (such as alkaloids, endotoxins, silicates, and lycopodine). A reflex arc develops, and lesions analogous to those of the malignant infectious syndrome appear at a distance. Stimulation of the stellate ganglion in the dog, for example, may cause changes in the pancreas, and stimulation of the third or fourth ventricle may cause lesions of the digestive tract. The reflex arc acts not only centrifugally, radiating from the central nervous system to the viscera, but also centripetally; for instance, peripheral irritation of the viscera can provoke cerebral lesions. Any intense stimulation may disturb the reticular substance of the brain stem, with repercussions on the cortex. The hypothalamus is a crossroads for the centrifugal and centripetal reflexes. The malignant infectious syndrome has its onset in those places that are richest in neurovegetative and sensitive fibers, such as the pharynx. It is now possible experimentally to produce the syndrome, but not to predict the nature and site of the resultant lesions. Reilly's thesis differs from that of Selye, who claims that reactions to stress are hormonal. Reilly believes that the hormonal reaction is secondary to that of the nerves. The difference in conclusions stems from the fact that Selye studied phenomena of a more general, diffuse nature. With less acute stresses, he obtained a variety of defense reactions. He is now beginning to concede the importance of the nervous system. The last years have seen great progress in the therapy of the malignant infectious syndrome; pathological reactions and metabolic disorders are better controlled, and new protective drugs have appeared, of which the best representative is chlorpromazine.

WHO Malaria Control Program.—The Malaria Conference of the World Health Organization of Belgrade, Yugoslavia, has opened the way to a closer cooperation between the countries in southeastern Europe for the purpose of eradication of malaria. Cooperative agreements on control of malaria already exist between Bulgaria and Rumania and between Greece and Turkey; an agreement on communicable diseases in general exists between Bulgaria and Yugoslavia. The conference recommended that a rapid exchange of accurate information on malarial conditions along common boundaries and on eradication methods should be established. Chlorophenothane (DDT)-resistant mosquitoes have so far been discovered only in Greece. Uniform resistance tests should be adopted and research actively pursued so that appropriate action can be taken rapidly should resistant mosquitoes make their appearance in any of the other countries. In Albania up to 1933 and in Bulgaria up to 1930 about 500,000 cases of malaria were reported annually. In the first 10 months of 1955 only 1,221 cases were reported in Albania and only 662 in Bulgaria. The number of cases in Greece dropped from 1,200,000 annually before the war to 408 in 1952. Rumania in 1948 had 338,198 cases and in the first 10 months of 1955 only 325. In Turkey, in 1940, 8.6% of the hospital patients had malaria, and in 1954 this was reduced to 0.6%. Yugoslavia, with about a million cases in 1935, had only 796 in 1953.

WHO-Sponsored Antirabies Treatment.—A new method of treating rabies has been shown to be successful. It combines the traditional vaccine with hyperimmune antirabies serum. A field trial was carried out in Iran by Dr. M. Balthazard and his co-workers of the Pasteur Institute in Tehran. This country was selected for the trial because many deaths occur there among people bitten by rabid wolves and because vaccine treatment has not prevented the development of rabies in victims bitten in the head. In the past 15 years, among victims of rabid wolves treated at the Pasteur Institute, about 40% of those bitten in the head died despite vaccine treatment. In August, 1954, a rabid wolf attacked 29 people in an Iranian village in the space of a few hours. The victims were taken at once to Tehran for treatment. The treatment was successful even among the 18 patients who suffered severe head wounds. The most striking case was that of a 6-year-old boy whose skull had been fractured by the wolf's bite and who survived, despite the fact that the rabies virus had direct access to his brain. He was given six injections of serum and a course of vaccine therapy.

UNITED KINGDOM

Poliomyelitis Vaccine.—The Minister of Health has announced that a new Salk-type of poliomyelitis vaccine has been developed in England. It is made from three strains of poliomyelitis virus, the type 1, or Mahoney, strain having been replaced by a less virulent strain closely related to the Brunhilde strain. Although it will not be available in substantial quantity until the end of the year, amounts that it is hoped will be sufficient to inoculate 250,000 to 500,000 of the 5,500,000 children between 2 and 9 years of age in England and Wales will be available during May and June. Detailed plans have been issued by the Ministry of Health to all local health departments, which will be responsible for the necessary arrangements. Vaccination will not be allowed during the period July to October, inclusive. Those children who cannot be vaccinated before July will receive priority when vaccination is resumed toward the end of the year. After November it is hoped that it will be possible to extend the age groups to be offered vaccination. The government proposes at the outset to buy all the vaccine that can be produced. While the quantity of vaccine is limited it will be administered only by local health departments. General practitioners may participate when larger amounts become available. The vaccine will be offered without charge to local health departments. It is proposed that two injections, each of 1 ml., be given with an interval of not less than three weeks. In order to achieve a degree of uniformity that will enhance the value of any conclusions that may be drawn, it is suggested that the vaccine be administered intramuscularly into the left arm. The question of whether a third injection will be necessary is reserved for further consideration.

Treatment of Syphilis of the Central Nervous System.—Certain types of syphilis of the central nervous system have become so infrequent that they are beginning to be forgotten in differential diagnosis, even in neurological clinics, according to J. P. Martin in the *Practitioner* (**176:**142, 1956). For instance, in World War I, 2,000 deaths were reported each year in England and Wales as due to dementia paralytica, but in 1954 there were only 126. The figures for tabes dorsalis are comparable. Penicillin continues to be the principal drug used to treat syphilis of the central nervous system. Thus, in dementia paralytica, the use of penicillin has entirely superseded the inducing of malaria, being safer, more prompt in its action, more easily controlled, more reliable, and when necessary more easily given as a repeat treatment. A course of treatment consists of 8 to 10 million units given over a period of 10 days; on the first day 1,500 units is given every three hours to avoid a Herxheimer reaction, and then 500,000 units is administered intramuscularly twice daily. Crystalline penicillin is preferred to procaine penicillin or preparations of penicillin in oil. The mononuclear cell count in the cerebrospinal fluid is a reliable guide to the efficacy of treatment. Within two months of successful treatment, it should be down to three or at most four mononuclear cells per cubic millimeter. If the count is four or five per cubic millimeter, the fluid should be reexamined in three months. If it is over five per cubic millimeter, another course of treatment should be given. If the fluid remains of the inactive type, i. e., with normal mononuclear cell count, for six months after treatment, it will remain so permanently. The author observed no patient in whom penicillin did not render the spinal fluid mononuclear cell count permanently normal. In order to facilitate the absorption of chronic inflammatory tissue, he gives a mixture of mercury and iodides in association with, and after, the penicillin treatment. He knows of no evidence that potassium arsenite solution or bismuth subcarbonate hastens absorption, and, in slowly responding patients, the inducing of malaria is not justified by the risk involved. In patients in the author's follow-up clinic, who include some patients treated in 1945 with penicillin alone and nearly 40 who have been followed for more than five years, he has seen no relapse. With properly controlled penicillin therapy, the late mortality rate associated with the inducing of malaria (40 to 50%) is not seen.

In meningovascular syphilis, the results with penicillin have not been so dramatic because the results with older forms of therapy were usually satisfactory. Even so, penicillin is now given routinely in the same dosage as for dementia paralytica and combined with mercury and iodides, because it can be administered rapidly and easily. The author recommends mercurial inunctions in all patients with meningovascular syphilis. Penicillin should also be given to patients with tabes dorsalis. In many patients meningovascular syphilis is arrested by treatment with penicillin, but when the disease is well established and much sensory impairment has occurred, degenerative changes continue. Penicillin should be given for atrophy of the optic nerve, but mercurial inunctions and potassium iodide orally, to the limit of tolerance, are essential adjuncts. The Jarisch-Herxheimer reaction is most to be feared in patients with atrophy of the optic nerve.

Tuberculous Meningitis.—The results of modern therapy in tuberculous meningitis at the Children's Hospital, Sheffield, are reviewed by John Lorber (*Practitioner:* **176:**150, 1956). Of the 69 patients with this disease treated between 1952 and 1954 (inclusive), 59 (85.5%) were alive after a period of observation of one to four years. Of 20 patients admitted in 1954, 19 were alive. The child who died was in status epilepticus on admission. Eighteen of the 19 survivors were found to be in good health and had no sequelae. Deafness, which in the past was due mostly to the prolonged intrathecal administration of streptomycin, is no longer seen. Neurological sequelae are rare, and almost all the survivors are able to resume their previous mode of life without difficulty. There is no appreciable intellectual deterioration. Relapses are rare and respond well to treatment. The chances of patients who are in coma on admission are much better now than a few years ago, but almost all patients with fatal cases and those who survive with severe sequelae come from this group. Early diagnosis is the key to success, and this early recognition is being effected. In the period 1947 to 1950, 82

patients were admitted to the hospital, a third of whom were unconscious, in spite of the fact that when the disease was of long duration the patients were not always admitted. From 1952 to 1954, inclusive, 69 patients were admitted with no selection; only 14% of these were unconscious. The figures for the country as a whole are equally impressive. Thus, in 1946, in England and Wales 1,587 patients with tuberculous meningitis (1,132 were children) were reported, and all died. In 1953, only 345 persons died of tuberculous meningitis, and the figures for the next two years are even better.

The treatment at the hospital consists of isoniazid and streptomycin. The former is usually given orally in doses of 10 to 20 mg. per kilogram of body weight daily for six months. It may be given intravenously if the patient is in coma or has persistent vomiting. Intrathecal administration is unnecessary. The recommended dosage of streptomycin is 40 mg. per kilogram of body weight per day intramuscularly for six months. The treatment is highly specialized, and hospitalization is essential in all cases.

Tuberculin Therapy.—The value of tuberculin in conjunction with streptomycin as a precursor to surgery in the treatment of pulmonary tuberculosis is discussed by F. H. Young in the January issue of the *Brompton Hospital Reports*. More than 100 patients with pulmonary tuberculosis were treated with tuberculin in combination with streptomycin at the Brompton Hospital and the Scottish Red Cross Sanatorium, and the physicians in charge of these patients are satisfied that no permanent adverse effect follows its use. General reactions have usually been mild. Focal reactions have occurred at the seat of previous tuberculin tests and in the larynx, bronchi, abdomen, and pleura; doubtful focal reactions have been seen in lung tissue. In the case of patients undergoing major thoracic operations, increased doses of tuberculin were given until there were no temperature reactions to the injection of 1 ml. of undiluted tuberculin (OT) or the equivalent of PPD. At this stage the cutaneous reactions were negative to a 1:100 dilution of OT, and usually to a 1:10 dilution. Details are given of 40 patients who received this treatment, 7 of whom had operations on successive sides, i. e., a total of 47 operations, including 2 pneumonectomies, 8 lobectomies, and 14 thoracoplasties. Before operation, 12 patients were considered to be good risks, 20 moderate risks, and 15 poor risks. All had tubercle bacilli in the sputum or on gastric lavage before starting treatment, and over 50% had had tuberculosis for more than two years. None had received streptomycin for long periods (12 received it for 16 weeks or less, 17 for 16 to 26 weeks, and only 11 for more than 26 weeks). Postoperatively, 25 were in better condition than was expected. Omitting complications, the maximum temperature did not exceed 38 C (100.4 F) in 29 patients. No patient without complications was worse than expected. It was possible to follow up the 40 patients for periods ranging from three months to over one year, and 39 of these were well. One patient had a positive sputum test because of a cavity on the side not operated on that reopened after 18 months, but he felt well and was working and refused to come in for further treatment.

Milk Drip for Gastric Ulcer.—Doll and his co-workers have attempted to assess the therapeutic results of the continuous intragastric milk drip by means of a controlled trial (*Lancet* **1**:70, 1956). A series of 164 patients hospitalized for fresh gastric ulcers was divided at random into two groups, 82 being given the standard ulcer regimen with a modified Meulengracht diet and 82 a continuous milk drip. The results were assessed subjectively by recording the patient's description of the symptoms and objectively by comparison of the radiological appearances before and after treatment. Forty of the patients in the milk-drip group were given 6 pt. of milk every 24 hours through the drip for two weeks and then 2 pt. of milk by drip at night only for 10 days. A further 42 were given 20 to 40 gm. of sodium bicarbonate daily in the milk drip. The proportion of ulcers that healed in the course of a month was identical in the two treatment groups, 20 out of 82, although the pH determination of the gastric contents in the milk-drip group was above 4. The average amounts healed, expressed as a percentage of the initial size of the ulcer, were also similar. It would seem that, unless very short periods of exposure are effective, peptic digestion cannot be of prime importance in maintaining the activity of a gastric ulcer and that under conditions of bed rest in a hospital further treatment aimed at the complete elimination of peptic digestion is unlikely to help the ulcer to heal. The impression was gained that pain was relieved more rapidly with a milk drip than without it and that an alkalinized milk drip is a useful adjunct to the standard treatment of patients whose pain persists after rest in bed. Patients given a milk drip gained on the average more weight than those not given it, 7 lb. (3.2 kg.) compared with 3½ lb. (1.5 kg.). A slight advantage, 15 oz. (0.43 kg.) was still preserved in the milk-drip group two to three months later. Doll and his colleagues are careful to state that conclusions drawn from these cases of gastric ulcer cannot be applied necessarily to the treatment of patients with duodenal ulcer.

Epidemic Respiratory Illness.—On Christmas Eve there was a sudden demand for beds in the children's hospitals in Liverpool. Over the Christmas holiday general practitioners and pediatricians in the Liverpool area were called in to see patients with acute respiratory infections that reached epidemic proportions. The condition, which was described as acute bronchitis, bronchiolitis, or pneumonia, occurred mainly in children under 18 months old. In the early stages the infection was severe, but it became moderate after a few days' treatment. About 230 cases were reported to the Liverpool public health department, and undoubtedly many treated in general practice were not reported. One of the affected children died. A similar outbreak occurred later in Sunderland, in which 100 children were treated for an acute respiratory infection in the Children's Hospital.

Immunity to Poliomyelitis.—In Britain poliomyelitis has occurred in widespread epidemic form only since 1947, and even now there are some areas where it has never been reported. Fallon has investigated a Welsh village, Betws-y-Coed, because no report of poliomyelitis had been received from there since poliomyelitis became a reportable disease in 1912 (*Lancet* **1**:67, 1956). Liverpool, where the disease is frequent, was used for comparison. Serums obtained from children 7 months to 14 years old from both places were examined for antibodies against the Mahoney, Y-SK, and Saukett strains of poliomyelitis virus. The level of serum antibodies in the child population was believed to reflect the recent prevalence of the virus in the community. Serums were examined at dilutions of from 1:2 to 1:10. Judging from antibody response, infection with all three types of virus had apparently taken place in both Betws-y-Coed and Liverpool, infection with Mahoney and Y-SK types predominating. The distribution patterns were similar in the two areas. The reasons for the absence of the disease in Betws-y-Coed is not clear. It is possible that clinical but nonparalytic cases have occurred and gone unnoticed. The finding that evidence of nonclinical infection in Britain is widespread at an early age may explain the lower incidence of clinical poliomyelitis in Britain compared with America.

Dysentery in England and Wales.—In the last 20 years dysentery has undergone a complete metamorphosis in England and Wales. From being a comparatively rare disease with a case fatality rate of 39%, it has become a prevalent disease with a case fatality rate of under 0.2%. In 1954 there were 31,834 cases, or 71.9 per 100,000 population, reported, an all-time high. An analysis of the figures for seven years, 1948-1954, by Bradley and Richardson (*Month. Bull. Min. Health* **15**:2, 1956) shows that the morbidity rates were much higher in both sexes in the age group 0-4 than in the age-group 5-14 and that the rates in the latter were higher than those in the age group 15 and over. In the six-year period, 1949 to 1954, about 34% of the reported cases each year occurred in the first quarter of the year, compared with 32% in the second quarter, 13% in the third, and 21% in the fourth. Thus, dysentery is largely a winter disease in England and Wales. The geographical distribution of the disease is closely correlated with the density of the population. Thus, in areas of urban development where a number of towns have grown into each other the average morbidity rate per 100,000 for the last three years has been 68, compared with an average of 36 in all other areas. In urban areas with populations of 100,000 or over, the rate has been 68 per 100,000, compared with 26 per 100,000 in rural areas. In the last few years at least 95% of the causative organisms isolated from patients with dysentery have been Shigella sonnei. The authors do not accept the view that Sonne dysentery should be ignored and allowed to

run its course without any special preventive measures, because deaths from this cause still occur in infants and older people and because even after a mild attack there is often some debility and convalescence may be prolonged. Furthermore, the conditions favoring the spread of Sonne dysentery also favor salmonellosis and other intestinal diseases.

Elderly in Industry.—The annual report of the chief inspector of factories for 1954 notes once again the increasing value of older workers in industry. One iron forge engaged in puddling iron and rolling it into bars and rods reports that it will have to close when the older men retire. Craftsmen of 60 years of age and older are often retained in many trades in which the accident risk is high. In any emergency the senior hand often takes over from the younger men at the moment when the risk is greatest, and many accidents are avoided by the willingness of these senior workers to take over. Of the many older workers in the cotton industry, a number of men over 70 are still starting work at 6 or 7 a. m. One man of 73 worked for two days after a heavy shaft had fallen on his toes. In general, older women do not continue to work as long as men, but, at the herring curing plants at Yarmouth and Lowestoft, two women over age 80 worked. In view of the exposed conditions under which the herring curing is carried on, this is especially noteworthy. During the year there were 13,552 accidents to workers aged 60 and over, compared with 12,946 in 1953, but, for the third year in succession, the accident rates for persons aged 60 and over employed in factories were lower than for those in the prime of life. Falls of older workers were a common cause of the more serious accidents, and many others were due to the stubborn insistence of older workers that they could climb, lift, or pull as well as ever.

Regional Prescription Variations.—One of the curious features of the nation's drug bill since the inception of the National Health Service has always been the marked variation in the cost of prescribing in different parts of the country. A possible explanation of this has been suggested in the *Pharmaceutical Journal* (**175:**563, 1955). In 1954 the average total cost per prescription was 59 cents and the average total cost per person was $3.10, but the cost per prescription ranged from 48 to 71 cents and the number of prescriptions per patient from 3.45 to 8.86. In the industrial towns of Lancashire, each patient averaged 8.86 prescriptions and the average total cost per person was $4.88, but the total cost per prescription (55 cents) was below the national mean. In the seaside resorts, each patient averaged 6.35 prescriptions. The average cost per prescription (70 cents) and the average total cost per person ($4.48) were both high. In the suburban counties around London, on the other hand, each patient averaged 4.04 prescriptions and the average cost per prescription was 76 cents, but the total cost per person was only $2.64. High costs per person would seem, therefore, to be due to high frequency of prescription rather than to high cost per prescription. In some areas patients get large amounts of cheap medicines and in other areas a smaller amount of expensive medicines, but it seems to cost more to give a lot of cheap medicine than a smaller quantity of expensive medicine.

Dermatitis from Stockings.—Cases of dermatitis, supposedly the first in this country resulting from use of nylon stockings, are reported by Calnan and Wilson in the *British Medical Journal* (**1:**147, 1956). The patients ranged in age from 25 to 51, and in each patch testing demonstrated that the sensitivity was due to the dye and not the nylon itself. The most commonly affected sites were the dorsum of the foot and toes, the popliteal space, and the inner aspect of the thigh. Occasionally the heel, the sole of the foot, and the plantar surface of the toes were involved. The eruption was usually symmetrical. In some women it was acutely vesicular and exudative; in others, dry and scaly. All the manufacturers of nylon stockings in this country use the azo as opposed to the anthraquinone dyes. None of the patients in this series showed positive patch tests with anthraquinone, and five of them have worn this type of stocking without developing any further trouble. The sixth, who only wore black nylon stockings, was sensitive to the black azo dye used in these but was able to wear nylon stockings treated with logwood dye, which is used by some manufacturers for dying nylon stockings black.

A Hypertensive Family.—Dr. L. E. Wear, in *Lancet* (**1:**83 [Jan. 14] 1956), reports on a family in which, of four members of the first generation, three died of stroke and the fourth died of high blood pressure at the age of 62. All three members of the second generation have hypertension. The blood pressures of two of these examined by the author were 220/110 and 300/150 mm. Hg respectively. Only one member of this generation, a woman, is married, and her husband has a blood pressure of 200/110 mm. Hg. They have three children, 20, 19, and 12 years of age. The blood pressures of these three members of the third generation are 150/85, 155/80, and 150/80 mm. Hg respectively. These blood pressures were all taken at home, with the patient resting in an armchair, and were repeated several times. None of them had any albumin in the urine.

Libelous Newspaper Article.—On Jan. 4 an article entitled "Must Our Babies Be Born in Pain?" by Dr. Jon Collen was published in the *Daily Sketch*. It contained the following passage: "The shameful fact is that, although Dr. Read has won world-wide acclaim, the Royal College of Obstetricians and Gynecologists has seen to it that he is barred from working in any hospital in this country." The following day the college issued a writ for libel against the *Daily Sketch*. On Jan. 6 the *Daily Sketch* made the following statement: "The Royal College has complained that it is untrue to say that it has taken any steps whatever to prevent Dr. Dick Read from working in any hospital. We, of course, accept this statement. We readily agree that the words published may have been read as an attack upon the College itself and express our genuine regret for them."

Medical Questions on Radio.—Medical topics on the British radio are usually limited to serious talks or the dramatization of a definite medical topic, such as mental disease, malaria, or progress in research. The British Broadcasting Corporation is introducing a new approach with a weekly series called "Is There a Doctor in the House?" Describing the program as a medical brains trust, the B. B. C. states that questions of general interest concerned with medicine and biology sent in by listeners will be answered by experts. The moderator will be the former editor of a well-known daily, and he will put the questions to the experts, three physicians who will remain anonymous, and a guest speaker. The panel will vary from time to time but will always include a general practitioner and a specialist.

Premature Children and Walking.—J. W. B. Douglas in *Medical Officer* (**95:**33, 1956) reports a series of 445 infants weighing 2.5 kg. or less at birth. These were matched with a similar number of heavier babies born during the same week and drawn from similar home backgrounds. At the age of 2 years, eight of the premature children and one control child were not walking. Three of these premature children were Mongoloid, two had cerebral palsy, and three were described as "backward." The control child who was not walking had spina bifida. Excluding these nine children, the premature children were, on the average, three weeks behind the controls in walking ability. This is about the extent to which their conceptional age was less than the conceptional age of the controls.

Metabolic Unit in Genitourinary Hospital.—A new metabolic unit has been opened at St. Philip's Hospital, which is part of the Institute of Urology. This unit is believed to be the first of its kind as a purely urologic service in Britain. The unit, which is designed and equipped for the performance of metabolic balance studies, will be used for metabolic investigation and management of patients with urinary lithiasis and for the assessment and correction of metabolic and endocrine factors in other urologic disorders. The King Edward's Hospital Fund for London has defrayed most of the cost of construction of the unit, which has beds for six patients, a patients' day room, a diet kitchen, and a small laboratory.

Aortic Puncture and Artificial Pneumothorax.—A woman, aged 46, with long-standing pulmonary tuberculosis, died after an attempt to refill an artificial pneumothorax. Using short needles, difficulty had been experienced in finding an air space. A longer needle was therefore used, but this also failed and the operation was abandoned. Soon the woman lost consciousness and died an hour later. Autopsy revealed marked distortion of the intrathoracic structures and puncture of the aorta.

CORRESPONDENCE

THE FAMILY DOCTOR

To the Editor:—In every generation someone sounds the ominous warning that the general practitioner is approaching extinction and will soon take his place beside the dodo bird and the dinosaur. Despite these prophecies the family doctor has survived the ice ages and middle ages and will survive the atomic age as long as there is a man breathing. The profession itself cannot survive without dealing directly with patients as people, no matter what brilliant scientific achievements are reached. There never will be an automaton to perform this vital function for the vast hierarchy of specialists, so-called specialists, and would-be specialists. The general practitioner is the link that will never be missing between the Olympian heights of the consultant and the murky depths of humanity, with its assortment of ailing gallbladders, neuroses, and dermatoses. If the general practitioners went on strike the whole superstructure of specialized practice would collapse and unfortunate internists would have to take blood pressure and surgeons to make night house calls. The general practitioner is, therefore, condescendingly given some individual recognition by specialists, in spite of organizing himself into an Academy of General Practice, which has the same purpose. The specialists have made their status ultraexclusive by means of examining boards and are endeavoring to erect additional barriers before the aspiring doctor by making a few years in the mill of general practice a necessity for certification. By this latter action they admit that general practice does have some merit after all. For the same reason, plus desire of referrals, general men are given hospital status. Medical groups and clinics will always need one or more general practitioners to winnow the kernels from the chaff and treat the minor afflictions. Obviously, the patient does not need an ophthalmologist to remove a cinder from his eye. General practice has been defined roughly as the practice of the art of medicine, encompassing not only scientific data but also knowledge of emotional and spiritual reactions of patients to themselves and their environment. Patients need some other human being close to their own level and outlook to whom they can bring their troubles as well as their organs. They need someone who knows them as a complex combination of anatomy, physiology, and emotions floating in a frustrating environment, someone who can indicate the probable diagnosis to the specialist. Although some express alarm because 40% of all American doctors are specialists, I doubt that the proportion will ever rise much above this level until the country has become crystallized, rigid, and senescent. I think that this crystallization is far more advanced in the longer-settled and mature eastern part of the United States than in the younger and more labile western part. The public, however specialist-conscious it may be, still wants its friendly family doctor to mind it from the cradle to the grave.

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CONCOMITANT PAIN IN THE BACK AND ABDOMEN

To the Editor:—One of the common complaints heard in medical and surgical practice is concomitant pain in the abdomen and back. About 1915, when the three most important trunk disorders of orthopedic interest were tuberculosis of the spine, osteoarthritis, and malignant disease, Dr. John Lincoln Porter taught me a simple rule that has proved valuable in many cases: If the level of the pain is the same in the abdomen and back, its origin is probably in the former, and, if the level of the pain is lower in the abdomen than in the back, its origin is probably in the latter.

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CHRONIC PROSTATITIS

To the Editor:—In regard to the article in THE JOURNAL (**160:** 540 [Feb. 18] 1956) entitled "Chronic Prostatitis—Fact or Fiction?" I have a few comments. The authors had an unexcelled opportunity to examine the prostate and make a statistical analysis of these examinations. It is my opinion, however, that they did not report adequately what must have been available. In the first place, they made no observations on the size, texture, tenderness, or configuration of the prostate and no mention of associated seminal vesiculitis. This is true in all three of their groups: "normal," "nonspecific urethritis," and "chronic prostatitis." Also, they made no mention of any symptoms occurring in the so-called normal group. They state that all of their nonspecific urethritis patients received the same treatment, but do not describe what that treatment is. In the last sentence of the paper they conclude that "chronic prostatitis as the cause of symptoms may frequently be one of fiction rather than fact." They should have analyzed their results (1) to show a correlation between the number of "normal" men with positive findings, as they define them, and symptoms elicitable by careful history or (2) simply to emphasize the number of asymptomatic men who have significant amounts of pus in the prostatic secretion. As it is, they appear to have condemned a large number of genuine sufferers from chronic prostatitis to nonmassage therapy, including psychoanalysis, because doctors who do not see a large number of chronic prostatitis cases will have no way of judging whether treatment is necessary. To distinguish between clinical chronic prostatitis and asymptomatic purulent prostatic secretion is, in my opinion, one of the most difficult diagnostic decisions that can be made in the office practice of urology, and usually response to therapy is the only way a doctor can make a decision accurately. The amount of pus that is present in a genuine chronic prostatitis case varies markedly from week to week. This can be readily explained by two factors: 1. Normally all of the prostatic secretion obtainable is not examined, just one or two drops. 2. In the multitude of prostatic glands, there are undoubtedly some that will be emptied one week and not another, and these may be the ones containing pus. Undoubtedly, during the discussion at the meeting at the time this article was given, many of these points were raised. I think they should be properly included when any controversial article such as this is published.

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To the Editor:—The paper "Chronic Prostatitis—Fact or Fiction?" by O'Shaughnessy, Parrino, and White (*J. A. M. A.* **160:** 540 [Feb. 18] 1956) is significant and timely. It parallels my paper (Chronic Prostatitis: A Psychosexual Approach, *California Med.* **82:**454 [June] 1955). In my article the opinion was expressed that chronic prostatitis, unaccompanied by signs of active inflammatory disease, is a psychosexual disturbance, not a bacteriological disease. Prostate massage, local therapy, and antibiotic therapy are usually of minimal value; a careful history and evaluation of the background and good social and psychiatric counseling are the only effective and rational means by which this so-called prostatitis is controllable. Most prostatitis is grossly overtreated and certainly greatly overemphasized. A hands-off attitude should be reiterated constantly to the patient, and the benignancy of the condition must be emphasized. However, in addition to treatment aimed at psychiatric factors, gentle prostate massage can be employed judiciously because it mechanically empties a distended, congested, psychically traumatized gland fairly adequately.

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DRY MOUTH FOLLOWING ABDOMINAL VAGOTOMY

To the Editor:—I have lived with duodenal ulcer and its complications for half a century. I was subjected to a posterior gastroenterostomy in 1918. After a recent abdominal vagotomy I developed an almost intolerable and persistent dry mouth and a peculiar hoarse, croaking voice. The constant use of a steam inhalator, tincture of benzoin compound, and "nose drops" proved helpful, but the dryness continued. This condition was peculiar, in that it was not associated with thirst and not assuaged, except momentarily, by drinking water. Of the various expedients tried, it was found that chewing gum gave the most relief, the most effective measure being a small bit of gum held between the cheek and teeth. Now, after 10 months, the situation has improved about 50%. No physician or surgeon of my acquaintance has encountered such a syndrome. To me it seems strange that dryness of the mouth, such as is ordinarily encountered after large doses of belladonna, should develop and persist after an abdominal vagotomy. The etiology of this syndrome is not apparent, and I am curious about an explanation.

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DIAGNOSIS OF PULMONARY CAVITATION

To the Editor:—Although there are no pathognomonic physical signs of pulmonary cavitation, auscultation of the chest over a cavity is frequently rewarding. A unique sequence of sounds is superimposed on the vesicular or bronchovesicular inspiratory breath sounds. One rale, or a small group of medium or coarse rales, is heard, usually in the early part of the middle third of inspiration. Tubular or cavitary breath sounds begin with the rales. The pitch of the tubular breath sounds varies with the size of the cavity and the depth and speed of inspiration. These sounds are almost identical to the sounds produced by blowing up a balloon. The balloon is partially inflated, and the neck of the balloon is pinched between the fingers to prevent the escape of air. After the balloon is put to the lips the neck is released. There is sufficient moisture in the neck of the balloon to cause it to open with an audible crackle. Then, when one blows into the balloon, the noise of air entering a cavity is heard. This noise changes in pitch and intensity as the balloon expands and as the lungs are able to force less air into it. The sequence of events within the lung is not difficult to visualize. The lung tissue about the cavity is aerated as that part of the lung expands during inspiration. This produces the background of breath sounds. Expansion of the cavity lags behind that of the surrounding lung tissue because of the inflammatory changes in the cavity wall. The bronchocavitary junction is closed at the beginning of inspiration. At some point in inspiration, the negative pressure in the cavity and the elongation and dilation of the bronchiole are sufficient to overcome the cohesion of the bronchiolar opening. This produces one rale, or a short shower of rales, and is associated with the onset of cavity filling. The rush of air into the cavity produces tubular or cavitary breath sounds. These sounds change in pitch and intensity as the amount and velocity of the air entering the cavity decreases with the end of inspiration. The "balloon sign" is most helpful when x-ray demonstration of cavitation is equivocal. Recent or acute tuberculosis may produce cavitation with little reaction in the cavity wall, which in turn produces a faint cavity outline on the x-ray film. The cavity wall may also be obscured by overlying or adjacent disease or by the regenerating ribs after thoracoplasty. This sequence of sounds is known to many physicians but not described in the standard textbooks of physical diagnosis or chest disease. Therefore, it is thought worthwhile to call attention to the "balloon sign."

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PUBLICITY

To the Editor:—In Foreign Letters, THE JOURNAL, Feb. 4, 1956, page 412, appeared an item, "Deaths from Penicillin," on a report in the Danish medical literature of "three recent deaths from penicillin" prefaced with the remark: " 'Please do not mention in the daily press!' " The item continues: "This warning is the more appropriate as the measures to be taken in preventing such deaths concern the physician rather than the layman." It seems to me that one of the major problems regarding the overuse of penicillin is the pressure the patient puts on a physician to "give me a shot" whenever he is sick. If the patient realizes the potential hazards involved, it is easier for a physician to refrain from giving an injection when there are no indications for it. In any event, the layman has a right to know that sometimes penicillin can prove fatal. After all, it is his life and his health that are at stake.

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EDATHAMIL (EDTA)-TREATED PATIENTS

To the Editor:—We should like to call attention to the problem of calcium analysis in samples of serum and urine from patients being treated with edathamil (EDTA) for the removal of metastatic calcium deposits. The presence of edathamil-calcium complex in these samples interferes with the precipitation of calcium as calcium oxalate as this is commonly carried out in many laboratories. We recently studied a patient being treated with edathamil and were able to solve this problem by acidification of the samples to a pH between 3.0 and 5.0 after addition of the oxalate. There are other ways to solve the technical problem of analysis. The important fact is that, unless the physician notifies his laboratory that the patient is receiving edathamil, erroneous analytic results will be reported and may well not be recognized as such.

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LUMBAR TRACTION

To the Editor:—In the Correspondence section of THE JOURNAL, Dec. 24, 1955, page 1676, Dr. Samuel Varco offered a criticism pertaining to my paper "Lumbar Traction—Elimination of Physical Factors That Prevent Lumbar Stretch," published in THE JOURNAL, Oct. 8, 1955, page 549. Dr. Varco, in his letter, inadvertently offered a few erroneous statements. For example, he mentioned that I did the work on two cadavers and a medical student. My published papers all state specifically that three living subjects and one cadaver were studied. The study included four sets of experiments, each with five to nine measurements, not only of the body but of all disarticulated segments. Dr. Varco stated that he wondered about the condition of the cadaver. This had no bearing upon the subject, but, upon Dr. Varco's request, he received in November, 1954, a reprint of my article from the October, 1954, issue of *Journal-Lancet*. This reprint covered in detail the entire physical experiment. In this paper, the cadaver was described as "frozen, non-embalmed, well proportioned, non-edematous and intact. When thawed the body was without rigor." Over a year later, Dr. Varco suspects that irreversible changes may have taken place in the cadaver. With this, I must agree—the cadaver has irreversibly changed. Dr. Varco stated that I failed to differentiate between leg traction and pelvic traction. Actually, in my article, pelvic and leg traction are compared, and it is clear that the forces required are the same. In one instance the lower body segment is being pulled, while in the other it is being pushed. Obtaining the same resistance force figures for pelvic traction indicates that this type of therapy is just as useless as leg traction for spinal stretch.

There is one difference. With a pelvic belt there is support of the lumbosacral region, which, in combination with bed rest, in some patients provides relief of symptoms. This, however, has nothing to do with the fact that lumbar stretch is not obtained. Dr. Varco claims that with 25 lb. of weight he can easily drag a patient to the foot of the bed and wants to know in this case what has become of the body resistance. In adults, this is impossible; however, in some pediatric patients it may be possible, depending upon the weight of the child. Patients will eventually slide to the foot of the bed with not only 25 lb. but also 10 and 20 lb. of weight. This takes place due to "inching up" of the patient over a period of time and cannot be considered a drag force that overcomes surface resistance. A force strong enough to overcome resistance does so at once.

The lower half of the body (L3-L4 interspace) weighs approximately one-half of the total body weight. When one claims that he can easily drag a body with 25 lb., he is claiming that with less than 12.5 lb. he is overcoming the resistance of the lower half of the body. It took more weight than this just to overcome the resistance of two lower extremities that were disarticulated at the hip—and this in a specimen that weighed only 118 lb. (53.5 kg.). There is one accurate way to measure surface traction of the body and its segments. A head halter and scale are attached to the head of the bed. The halter and pelvic belt with pulleys and ropes are applied to an undressed patient. Enough weight is applied (this is considerable) to make the head halter scale register 20 lb. The 20 lb. is deducted from the total weight below. The result is the surface traction resistance of the body. Cadaver segment resistance also may be measured by this "back-scaling" method. To put the whole problem simply, a body is cut in half through the L3-L4 level. The lower half of the body is placed in bed. Weights are applied by leg traction and by pelvic traction. If not enough weight is applied to move the body segment, no stretch above it can be obtained. "Back-scaling" can be done for greater accuracy. It does not matter whether the lower body segment is pulled from below or pushed from above. This is an important, widespread method of therapy, and, if it is of no value as a lumbar stretch force, the facts should be clearly presented. My findings are physical measurements of weight under specified conditions. This required no special equipment, no laboratory, and no complicated methods. All conditions, facts, and figures were published. The entire procedure was reviewed by a competent physicist. Resistance factors were 54% of the body and segment weight.

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THE LEISURE CORNER

MOTION PICTURE PHOTOGRAPHY

The trend to outdoor living has gone a long way toward changing our leisure habits. Take photography, for instance. Last year, more footage of film was shot by home hobbyists in any one of several states than is shot in Hollywood over a five-year period. People are getting out of doors, and with man's passion to record, they are filming themselves and their families in action.

Photography, of course, is not new. Since the days before World War I, men have taken their box cameras out to "snap" friends and relatives in familiar poses. But as our tempo of life has increased, experts have had to develop equipment to catch this faster life and they have had to make this equipment available at prices the average consumer can afford. Today, for example, one can buy a "Movie Diary" kit, including a camera, shooting lights, instruction booklets, and leather carrying case, at a reasonable price. A good 8-mm. camera with a fixed focus lens is available for less than $50. Projectors are available for under $75. In addition to the two factors of low prices and desire to capture a record of contemporary living, market analysts attribute the increased interest in home movies these days to several other important factors, including ease of operation, the opportunity for the whole family to participate in the fun, and the desire to be artistically creative.

One of the pioneer firms in home movies recommends that the amateur start out with a minimum of equipment and build up slowly. The amateur can get by with a camera, film, and projector for a start, they say, using a blank white wall for a screen. As he becomes more expert at taking pictures, he may want to own a properly treated screen to show up his films to best advantage. Gradually, he will learn how to take indoor movies and will want lighting equipment. For the outdoors, he will learn to use light meters, lens filters, telescopic lenses, and other equipment used by experts.

Probably man's creative interest is as responsible as anything else for his interest in home movies. A beginner can be as successful with his movies as an expert. However, one thing amateurs have to be told over and over again is to hold the camera still. The tendency is for most beginners to sweep the camera in shots of the panorama that show up on the screen as a blurred strain on the eyes.

Another tip is to plan out a scenario in advance of taking any shots. Most people start out by taking random shots—Johnny on his bike, Susie dressed up in her Sunday best, Dad mowing the lawn, and other somewhat related shots. If you will plan a series of events and record them in the order in which they happen, you will really relive the day from beginning to end when you project it on the screen. Take, for example, a film on Johnny's vacation at summer camp. Using only two rolls of film, you might film it like this: (1) 10 ft. showing Johnny gathering clothes, sports equipment, and his trunk for camp and then loading it in the car; (2) 15 ft. showing crowd of children at station waiting for train, with view of Johnny and his counsellor on station platform; (3) 5 ft. showing entrance to Johnny's camp (this might be taken at a later time when you visit him); (4) 10 ft. showing Johnny's cabin with cabin mates and counsellor standing in front; (5) 10 ft. showing general view of camp grounds and buildings; (6) (second roll) 10 ft. showing general views of camp's waterfront and swimming area; (7) 20 ft. showing general views of afternoon swimming period, with long shots of Johnny diving; (8) 5 ft. showing close-up of Johnny coming back from swimming; (9) 5 ft. showing view of kids running to mess hall for supper; and (10) 10 ft. showing view of campers gathering for evening singing.

It becomes obvious from a sample scenario such as this one that one of the appeals of making home movies is that everyone gets a kick out of taking part in them. And everyone certainly enjoys looking at them over and over again. There is something about action that prevents it from becoming boring to look at.

Good things, of course, lead to other good things. Many home movie enthusiasts have developed their new interest to a point where they design combination play rooms and projection rooms in a cellar or spare room. There is relaxation in such activity, and good constructive work comes from it. On rainy days, when conditions are not the best for shooting movies, the amateur can putter around in a home-made workroom cutting and splicing films, putting titles on them, and juxtaposing scenes to get better effects. The art of film-cutting and splicing is a hobby in itself.

One need not mention perhaps the fact that the great commercial movie industry draws most of its technical experts from the ranks of young amateurs trained from early ages in the techniques of film-making. With television films becoming more and more important as an art and entertainment medium, many fathers will not be loath to let their children experiment with cameras of their own. It is the natural culmination of a society that has produced technical efficiency in the mechanics of life that the younger generations should turn to techniques in improving entertainment during our leisure hours. The time may someday come when man's working hours may well be indistinguishable from his pursuits during leisure hours.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

The Influence of Age on the Hemoglobin Level in Congenital Heart Disease. R. J. Shephard. Brit. Heart J. **18**:49-54 (Jan.) 1956 [London, England].

This report is concerned with studies on the relationship between age and hemoglobin level in 350 patients with congenital heart disease who ranged in age from 2 to 60 years. To avoid errors resulting from prolonged venous or capillary stasis, blood samples were collected directly from the right side of the heart and from the femoral artery during cardiac catheterization. The per cent of saturation and total oxygen capacity of the samples were estimated by the Haldane blood gas analysis apparatus. It was found that the patients who were free from cyanosis had hemoglobin levels lower than normal values, particularly during the early years of childhood. The mean values in the patients with cyanosis, however, were far above those of the acyanotic patients throughout childhood. Up to the age of 20 about 85% of the patients with cyanosis could be distinguished from those without cyanosis by estimating the hemoglobin level alone. In adult life the hemoglobin values of the cyanotic patients gradually became like those of the acyanotic group, perhaps owing to the death of the patients with the more severe forms of cyanosis. The poor correlation between arterial oxygen tension and hemoglobin level in patients with cyanotic heart disease is probably due partly to variations of hemoglobin level with age and partly to factors restricting hemoglobin formation in the more severe cases. These results suggest that in children with cyanotic congenital heart disease the proportion of those who have an increased hemoglobin level is sufficiently great to make this a useful clinical test for a right-to-left shunt. However, if the hemoglobin level is to be used in this way, it is essential to note both the normal age variation and the general effects of cardiac disease on the hemoglobin level.

Unusual Cases Resulting from the Differential Diagnosis of Asthma. H. A. Howes. J. Michigan M. Soc. **55**:50-53 (Jan.) 1956 [St. Paul].

Two men aged 47 and 64 years, respectively, and a 15-year-old girl were referred to Harper Hospital, Detroit, for examination for allergies because of coughing and wheezing dyspnea. In none of these patients was any factor of hypersensitivity relevant. Instead, each one of the patients presented an unusual and complicated clinical problem, and the asthma that originally was considered allergic proved to be caused by other conditions. In the younger man, the extensive consolidation of both lungs revealed by roentgenograms of the chest was a manifestation of a hypertensive cardiovascular-renal syndrome, and the patient's hypertension was controlled by removal of a clinically nonfunctioning kidney. Marked pulmonary congestion and edema with bilateral pleural effusion and cardiac enlargement shown by roentgenograms of the chest in the other man improved rapidly after treatment with radioactive iodine (I^{131}); his condition thus proved to be thyrogenic heart disease. Evidence indicated that the girl had mucoviscoidosis, an uncommon congenital disorder. These observations illustrate how important it is to ascertain the exact cause for each case of asthma.

The place of publication of the periodicals appears in brackets preceding each abstract.

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The Care of the Seriously Ill Asthmatic Patient. H. M. Carryer, Postgrad. Med. **19**:124-130 (Feb.) 1956 [Minneapolis].

Many measures introduced in the therapy of asthma are more readily applied in the hospital than in the home. Furthermore, a hospital room immediately removes the patient from contact with rugs, draperies, dust, respiratory irritants, and other offending allergens that may be present in his home. The use of bronchodilators is important for symptomatic relief. The author prefers epinephrine in aqueous solution. Certain patients derive benefit from nebulized epinephrine solutions. Ephedrine and similar drugs induce a moderate epinephrine-like effect that is prolonged over a period of four to six hours. If the patient's tolerance for ephedrine is poor, there are other ephedrine-like drugs such as methoxyphenamine (Orthoxine) hydrochloride or phenylpropanolamine (Propadrine) hydrochloride that are useful. They have fewer side-effects than ephedrine. However, they also have somewhat less influence on asthma. Among the xanthine derivatives, aminophylline is the most important in the management of asthma. Oxygen or oxygen diluted with helium are the gases most frequently employed for inhalation by asthmatic patients. For the administration of these gases, the author prefers a mask, which may be applied or removed more easily than a nasal catheter or an oxygen tent. For a seriously ill asthmatic patient in whom continuous oxygen therapy is necessary, an oxygen tent may prove more suitable than the mask. The occasional patient who has advanced pulmonary emphysema may be adversely affected by oxygen therapy. In such individuals a degree of oxygen want affords a critical stimulus to the flagging respiratory center. The sudden change afforded by oxygen therapy often may allow a depression of the respiratory center, causing apnea and unconsciousness. When such a condition exists, one must substantially reduce the amount of oxygen used, retaining only that which will afford some relief but still does not remove the critical stimulus that oxygen want affords. In some asthmatic patients, particularly in those who have recently undergone operations on stomach, kidney, or diaphragm, the author resorts to the use of carbon dioxide. It is of paramount importance to bring about adequate hydration of the seriously ill asthmatic patient. Fluids are administered until a total of 2 to 3 liters has been given. A 5% solution of dextrose in water is usually suitable. For those patients receiving cortisone or corticotropin, it may be especially desirable to omit all sodium in the injected fluids. The use of an expectorant is designed to thin the tenacious sputum. Until hydration has been produced, the value of expectorants is limited. By hydration plus the effective use of expectorants, the asthmatic patient may substantially reduce his coughing; this, in turn, reduces bronchial irritation and bronchospasm. When selecting a sedative, one must avoid those drugs that significantly depress the respiratory center. Since the introduction of cortisone and of corticotropin the physician has had powerful weapons in the management of asthma, but use of these drugs is only one of several facets in the management of the seriously ill asthmatic patient. In using cortisone, the author prefers periodic discrete courses. Opiates should be avoided in the management of asthma. The author finally comments on the control of such complications as bronchitis, bronchostenosis, and pulmonary emphysema. Any program of treatment should have regard to the whole patient, taking into consideration asthma, its complications, other organic diseases, and the patient's emotional difficulties.

The Genesis of Thyroid Adenomas. H. Zondek and H. Leszynsky. Lancet **1**:77-78 (Jan. 14) 1956 [London, England].

Both diffuse and nodular enlargements occur in the same thyroid, but why there is nodular rather than uniform enlargement is not understood. The authors report observations on hypothyroid goiters. The subjects were two siblings, a boy aged 17 years (case 1) and his sister aged 12 (case 2), with familial spontaneous cretinism and goiter. Both had voluminous diffuse

goiters in which five (case 1) and three (case 2) nodules, varying in size from that of a large cherry to that of a peach, were embedded, and both showed the clinical picture of childhood myxedema. The administration of a total dose of 960 mcg. (case 1) and 820 mcg. (case 2) of triiodothyronine within eight and nine days, respectively, led to the disappearance of the myxedema. The response of the goiters to therapy was, in both patients, consistent with the well-known fact that diffuse thyroid enlargements respond more readily than the nodular ones. After a state of clinical remission had been maintained for some time, both patients were allowed to relapse. This relapse was accompanied by renewed and rather rapid formation of a goiter that again was partly diffuse and partly nodular. Diffuse enlargement seemed to precede the formation of the nodules, which reappeared in the converse order of their disappearance. They occupied exactly the same sites as before treatment. Radioiodine studies during the first period of observation in case 1 showed a total uptake of 14.3% by the thyroid gland after 48 hours. Nodular and diffuse areas behaved exactly alike, except that one nodule collected two or three times as much iodine as did the other tissues, although it had responded to therapy and its subsequent withdrawal exactly as did the less active nodules. The authors assume that local differences in responsiveness to the goitrogenic agent—presumably the thyrotropic hormone—accounted for the formation, size, and possibly the nature of the nodules. It seems that a regional increase in sensitivity to the goitrogenic stimulus may go so far as to render the tissue refractory to even large doses of thyroid hormone, whereas in other areas of the same gland much smaller amounts suffice to counteract the stimulating agent. The nature of the factors that determine the local responsiveness of the thyroid tissue to the goitrogenic stimuli remains to be determined. Another problem still to be solved is whether the administration of thyroid substances that suppress the goitrogenic stimuli succeed not only in reducing the volume of nodules but also in protecting them from disorderly growth, i. e., malignant degeneration. On the strength of the observations described, this hypothesis is advanced first of all for adenomas within hypothyroid glands, but it may also apply to euthyroid (nontoxic) adenomas. The authors feel that their deduction is consistent with the results of experimental and isolated clinical observations to the effect that the administration of antithyroid drugs may produce, especially under hypothyroid conditions, malignant and even metastasizing thyroid neoplasms.

Takayasu's Syndrome, "the Pulseless Disease." V. Boccardelli, Prog. med. **11:**687-690 (Nov. 30) 1955 (In Italian) [Naples, Italy].

Takayasu's syndrome or pulseless disease is rare; 58 cases have been reported so far in the Japanese, 26 in the European, and 2 in the American literature. It is a process of chronic arteritis obliterans involving the arteries that arise from the aortic arch. The condition is characterized by absence of pulsations in the radial arteries, by the impossibility of determining the arterial pressure in the upper extremities, and by symptoms attributable to ischemia of the brachiocephalic region. Although its cause and pathogenesis are still unknown, Takayasu's syndrome seems to be a specific reaction of the organism to an infection, and often the patient's history discloses the presence of an infectious disease, frequently of the rheumatic type. The syndrome has been reported most often in young women. Occlusion of the arteries that arise from the aortic arch takes place slowly, and the vessels become hard, fibrous, cord-like structures. As a consequence of the circulatory blocking of the brachiocephalic area, collateral circulation develops at the level of the descending aorta. The blood reaches the subclavian system and the upper extremities through the intercostal and the phrenic arteries and the cerebral circulation through the vertebral arteries. The compensation is as a rule insufficient, especially with regard to the brain, because it is effected through the posterior communicating arteries, which, though hypertrophied, do not reach a volume that makes it possible to maintain an adequate circulation. Important changes take place in the fundus oculi of the patients with this syndrome. These changes are followed by secondary changes in the retina, atrophy of the iris, cataract, and corneal opacities. Histologically, the lesions present the characteristics of an arteritis, with marked inflammatory phenomena, notable cellular infiltration, and the presence of giant cells. Thrombi, probably secondary to the arteritis, are also found. The prognosis of Takayasu's syndrome is poor, and death ensues as a consequence of the cerebral ischemia. The course is chronic, and the maximum survival period reported in the literature was 14 years. An effective treatment for this condition is not known.

Studies of Bacterial Throat Flora During Chemoprophylaxis of Rheumatic Fever. J. M. Miller and B. F. Massell. New England J. Med. **254:**149-154 (Jan. 26) 1956 [Boston].

Throat cultures were obtained from 213 patients with a past history of acute rheumatic fever who were seen at periodic intervals in a follow-up outpatient clinic. The study was conducted over a 12-month period. The number of clinic visits and throat cultures in individual patients varied from one to 30. The penicillin-treated group included 59 patients who received buffered penicillin G by mouth in amounts of 100,000 units three times daily. The sulfadiazine-treated group consisted of 60 patients who received 0.5 gm. of sulfadiazine twice daily. The control group consisted of 94 patients who were not receiving daily chemoprophylaxis but instead were instructed to take penicillin at the first sign of an upper respiratory infection. It was found that long-term chemoprophylaxis by means of sulfadiazine or penicillin given orally effects no major change in the bacterial throat flora that may predispose such persons to serious superinfection. The predominant bacterial flora of the throat in treated subjects of this study remained essentially the same as that in subjects not receiving prophylaxis. The presence of nonhemolytic Micrococcus (Staphylococcus) aureus was slightly more frequent in the group receiving penicillin than in groups receiving sulfadiazine or no prophylaxis. The occurrence of hemolytic M. aureus was approximately equal in both groups receiving prophylaxis, and this organism was present to a higher degree in both these groups than in the control group not receiving prophylaxis. The prophylactic dose of penicillin employed in this study appeared to suppress Diplococcus pneumoniae to a level of prevalence below that of the control group and the sulfadiazine group. Sampling of throat cultures in these subjects revealed no positive culture for group A beta-hemolytic Streptococcus in either group receiving chemoprophylaxis, but two such cultures were observed in the control group. Prophylactic administration of penicillin appeared to result in a low but definitely higher prevalence of gram-negative coliform bacilli in the throat flora as compared with the other two groups of patients. Rarely did these coliform bacilli become the predominant flora. The reasons for this low rate of gram-negative conversion are discussed in relation to reports in the literature regarding dangers of throat flora alterations as an antecedent to superinfection. The data obtained in this study emphasize the safety of chemoprophylaxis of rheumatic fever so far as secondary bacterial complications are concerned.

Treatment of Rheumatoid Arthritis and Osteoarthritis with Succinate-Salicylate. W. A. Gilpin. J. Michigan M. Soc. **54:** 1428-1432 (Dec.) 1955 [St. Paul].

The succinate-salicylate preparation (Ber-ex) used by the author in 30 patients with rheumatoid arthritis and in 30 patients with osteoarthritis contains 0.18 gm. of calcium succinate and 0.24 gm. of acetylsalicylic acid per tablet. Twenty-four tablets were administered daily (in four equal doses) for 21 days; then 16 tablets for 30 days or until a remission in the rheumatoid joints occurred; then 12 tablets for 30 days; and finally a maintenance prophylactic dose of four tablets daily. Mild relapses occurred in only two patients, and then the dosage was increased to 24 tablets daily for one week, after which dosage was reduced. Succinate-salicylate proved to be an excellent therapeutic agent in correcting the signs and symptoms in both osteoarthritis and rheumatoid arthritis. Side-effects were fewer than might be expected with acetylsalicylic acid alone. Use of the combination of calcium succinate and acetylsalicylic acid proved far superior to use of acetylsalicylic acid alone as regards not only toxicity but therapeutic results as well. The sedimentation rates in

patients with rheumatoid arthritis rapidly became normal and remained so. Prothrombin rates did not change. Results were lasting and apparently affected the disease process itself over the two-year follow-up. Succinate-salicylate therapy did not require as much supervision as do other treatments, such as the administration of corticotropin, cortisone, or gold. The author believes that succinate-salicylate is the treatment of choice in early arthritis when salicylates are indicated.

The Place of Corticotherapy in the Treatment of Tuberculous Meningitis. G. Boudin and J. Barbizet. Presse méd. **64**:1-3 (Jan. 4) 1956 (In French) [Paris, France].

Corticotherapy was associated with the usual treatment for tuberculous meningitis in 11 adult patients and was adjudged valuable by the authors in 8 of them. The agents used were corticotropin intravenously administered, sometimes alternated with cortisone by mouth, and hydrocortisone given intraspinally. The first two are capable of curing the comatose forms of the disease and are particularly valuable in severe cases, cases treated late or insufficiently, and those that have progressed to chronicity. All three drugs, especially hydrocortisone, decrease the albumin content and the number of cells in the spinal fluid. Cortical hormone therapy should be reserved for those patients in whom the standard treatment fails to give results, but it must be instituted early if sequelae are to be prevented. Cranial nerve paralysis and involvement of the optic chiasm are two of the most important indications for corticotherapy. There seems to be no special hazard in the association of the hormones with the antibiotics and chemotherapy used in tuberculosis.

Orientations in the Treatment of the More Severe and More Progressive Types of Pulmonary Tuberculosis. G. Pozzi and S. Scoccia. Minerva med. **46**:1496-1499 (Nov. 24) 1955 (In Italian) [Turin, Italy].

The combined administration of streptomycin, liver extracts, and vitamin B complex rather than of antibiotics alone is recommended in the treatment of patients with severe and progressive tuberculosis in whom frank toxemia is present and whose prognosis is poor. It is especially indicated because it can attack the Mycobacterium tuberculosis without further harm to the patient. The authors used this combination in the treatment of five patients with acute and subacute miliary tuberculosis, in three with primary and eight with secondary caseous bronchopneumonia and pneumonia, and in three with chronic isolated cavitary tuberculosis. The patients were given 1 or 1.5 gm. of streptomycin in 4 cc. of liver extract every day or every other day for a minimum of three months. Total doses of from 60 to 90 gm. of the antibiotic in this short time never caused intolerance or toxic effects, disturbances to the acoustic or vestibular branch of the eighth cranial nerve, or other reactions. Marked improvement in the general condition, clinical stabilization of the tuberculous process, and an immunobiological balance were present after this treatment in most of the patients. At this point, streptomycin was combined with isoniazid in the usual doses, and this combination brought about further improvement and sometimes recovery. Three patients died, but 16 benefited so much from this therapy that in some of them medical or surgical collapse therapy could be instituted.

First Clinical Observations on the Effects of Cocarboxylase in Severe Tuberculosis. L. Petruccioli and G. Rossa. Minerva med. **46**:1491-1496 (Nov. 24) 1955 (In Italian) [Turin, Italy].

Earlier investigations by the authors had indicated that massive doses of cocarboxylase influenced favorably the course and characteristics of tuberculosis in guinea pigs. Cocarboxylase was given to 12 men with severe bilateral tuberculosis and in poor general condition in whom antibiotic therapy was of no avail and the prognosis was extremely bad. These patients had been receiving 1 gm. of streptomycin every other day with no benefit for a minimum of 30 days when cocarboxylase therapy was commenced; they continued to receive the antibiotic during and after the treatment with the coenzyme. This was given by the intravenous route in 50-mg. doses every 12 hours for an average of 20 days. It caused a drop in, or the disappearance of, fever; a marked decrease in the daily amount of sputum; a diminution or the disappearance of toxic symptoms; and, in six instances, improvement in the roentgenographic appearance of the most recent lesions. It did not cause general side-effects. These good results can be ascribed to either (1) a direct action of the coenzyme on Mycobacterium tuberculosis (this hypothesis is rejected by the authors) or (2) a restoration of the antibiotic's activity. It is possible that, in addition to a direct action on the toxemic factors, cocarboxylase also induces biochemical modifications in tuberculous foci that permit the antibiotic's activity to be reestablished. The fact that the improvement observed in the patients who responded best to this treatment was identical with that which follows the institution of an efficient antibiotic therapy seems to support this hypothesis. It may well be that the action of cocarboxylase modifies some of those inhibiting mechanisms that are chiefly responsible for the decreased activity of the antibiotic in the presence of pathological matter. Studies are in progress to test these hypotheses.

SURGERY

Factors Which Influence the Results of Mitral Commissurotomy. W. R. Milnor. Postgrad. Med. **19**:48-52 (Jan.) 1956 [Minneapolis].

The author reports a series of 150 operations for mitral stenosis. Great improvement was obtained in 79 and moderate improvement in 28 patients; that is, 71% of the patients were improved, whereas 27 or 18% remained unimproved or became worse. There were 16 deaths, of which 11 occurred at operation or less than a week after it. The fact that the degree of improvement varies and that some patients are not helped or are made worse by operation emphasizes the need of recognizing the factors that determine whether a patient will benefit from mitral commissurotomy. The age of the patient was not a significant factor. Furthermore, there seem to be no absolute indications or contraindications for mitral commissurotomy. In each case the degree of disability and the complicating factors must be weighed against the chances of benefit from operation. Among the factors that diminish the patient's chance of a good operative result are the presence of a marked degree of mitral insufficiency, a marked degree of aortic stenosis or insufficiency, a long history of right ventricular failure responding poorly to treatment, marked enlargement of the heart, and a definite history of embolism. In some cases, mitral commissurotomy is indicated in spite of these complications and offers the possibility of significant improvement.

Electrocardiographic Changes During Hypothermia and Circulatory Occlusion. C. E. Hicks, M. C. McCord and S. G. Blount Jr. Circulation **13**:21-28 (Jan.) 1956 [New York].

The use of hypothermia and circulatory occlusion makes it possible to operate on the open heart under direct vision, but they are accompanied by marked abnormalities in conduction and rhythmicity. The electrocardiographic abnormalities occurring in animals during hibernation or artificial hypothermia have been extensively studied, but those occurring in human beings have hitherto not been reported in significant numbers. The preoperative electrocardiograms of 25 patients ranging in age from 3 months to 36 years who were undergoing surgical treatment for various cardiovascular lesions have therefore been analyzed with reference to changes in cardiac rate, conduction patterns, configuration, and rhythm. Acquired heart disease consisting of syphilitic aortic insufficiency was present in the oldest patient; all the rest had congenital lesions (valvular or infundibular pulmonic stenosis, 13; atrial septal defect, 8; and ventricular septal defect, 3). The anesthetic agents used were ether, cyclopropane, and Pentothal. Medicaments administered during the operation included curare, succinylcholine, and Prostigmin. The patients were subjected to hyperventilation throughout the procedure. Two were receiving digitalis and one quinidine at the time of surgical treatment. Comparison of the findings in these patients with those previously reported in animals shows that the major difference lies in the severity of the alterations in rhythm and

the temperature levels at which they occur. Atrial fibrillation, for example, commonly occurs in cooled adult human patients but is rare in cooled animals. Many of the changes were inconstant and hard to evaluate, but others formed certain dominant electrocardiographic patterns that appeared consistently in most of the patients. These dominant patterns may be summarized as follows: (1) uniform and progressive slowing of the cardiac rate and conductivity as the temperature decreased; (2) progressive inhibition of the higher centers of rhythmicity as the temperature decreased, with the lower centers of inherent rhythmicity assuming control of pacemaking activity as the higher centers were depressed; (3) an increase in the irritability of the atrial myocardium, apparently related to the patient's age, when the body temperature fell below a critical level; (4) a low incidence of ventricular arrhythmia during the period of temperature reduction, believed to be the result of alkalosis caused by hyperventilation and of the use of Prostigmin; and (5) the frequent occurrence of ventricular arrhythmias during periods of total circulatory occlusion, apparently as a result of myocardial hypoxia and trauma incident to cardiac manipulation. These findings show that the disturbances of rhythm caused by circulatory occlusion are more profound than those resulting from hypothermia alone.

The Effects of Cardiac Irregularities upon Auricular Haemodynamics During Thoracotomy. V. H. Wilson, G. R. Crawshaw and K. B. Vetten. South African J. M. Sc. **20:**71-72 (Sept.) 1955 [Johannesburg, South Africa].

This paper describes the left auricular and systemic arterial pressures and electrocardiographic changes that occurred when sinus rhythm was spontaneously replaced by periods of auricular and ventricular arrhythmia during thoracotomy in one human subject and four dogs. The authors conclude that stable cardiac rhythm is necessary before the height and the pattern of left auricular pressures can be assessed in relation to surgery of the mitral valve. This conclusion is complementary to that of a previous publication, which demanded the stability of blood pressure for the interpretation of left auricular pressures.

The Danger of Surgical Dissemination of Papillary Carcinoma of the Thyroid. G. Crile Jr. Surg. Gynec. & Obst. **102:**161-165 (Feb.) 1956 [Chicago].

Papillary cancer of the thyroid can be disseminated and implanted both by needle biopsy and by an operation that cuts into the tumor. In Crile's experience with 107 cases of papillary carcinoma there were 23 patients who had had biopsies of the primary tumor or incomplete operations on the thyroid before they consulted him. In 17 of these the secondary operation revealed that cancer had been seeded in skin and scar or in muscle remote from the thyroid tumor. The incidence of distant metastasis was nearly 10 times as high in the 23 patients with incompletely removed tumors as in the patients whose tumors had not been cut into. In 8 of the 23 patients secondary operations, regardless of how extensive, failed to eradicate the disease. These results are in contrast to the excellent results obtained in a series of 84 consecutive cases in which no biopsy or incomplete operation was done before the primary tumor was removed; in this series there have been no deaths from cancer and no distant metastases developing after operation over a period of from 1 to 18 years (an average follow-up of over 5 years), and none of the living patients has had local recurrence of cancer. Surgical treatment in the latter group has been 100% effective as compared to effectiveness of only 61% in the patients whose tumors were biopsied or cut into by operations. Another factor that influences recurrence of papillary carcinoma is the resistance of the host. In most cases of papillary carcinoma resistance is high, but on several occasions, when myxedema was induced by treatment with I^{131} or by total thyroidectomy, the author observed extremely rapid growth of the metastases. This rapid growth of the tumor may be caused by thyroid-stimulating hormone of the pituitary, an excess of which is produced when there is a deficiency of circulating thyroid hormone. Conversely, when the thyroid-stimulating hormone is inhibited by giving large doses (3 grains or more daily) of desiccated thyroid, metastases in lungs or bone may regress or disappear. The author observed this effect of desiccated thyroid in seven patients.

Cancer of the Thyroid Gland: Clinical Analysis and Evaluation of Therapy in 144 Patients. T. A. Shallow, F. B. Wagner Jr. and R. E. Colcher. Surgery **39:**252-259 (Feb.) 1956 [St. Louis].

At the surgical division of Jefferson Hospital in Philadelphia, 144 patients with thyroid cancer were observed among 3,644 patients with disease of the thyroid in the years between 1923 and 1954. This is an average incidence of 4%, but an analysis by decades revealed that the incidence increased from 2.2% in the decade from 1923-1933 to 6.8% in the decade 1944-1954. This reflects the increase in surgery for nodular nontoxic goiter, in which most thyroid cancer is found, and the decrease in surgery for diffuse toxic goiter since the advent of antithyroid drugs. The peak incidence of thyroid cancer (65%) occurred between the fourth and seventh decades of life. Women predominated in a ratio of 2.3 to 1, but in the fifth and sixth decades the incidence in men almost equaled that in women. Sixty-six per cent of the thyroid cancers occurred in single nodules. The majority were of the papillary type (61% during the past five years). Only 18% of the patients underwent treatment within three months of the known onset of their goiter. This emphasizes the delay that occurs in the vast majority of cases. Any thyroid nodule can be cancer and should be subjected to frozen-section study. The operative procedures were generally conservative, but the authors now feel that the only adequate surgical therapy for any type of thyroid cancer is total thyroidectomy. Radical neck dissection on the involved side is recommended at the time of initial surgery if there is evidence of spread to the adjacent lymph nodes or veins. Of 85 patients who were followed up, 60% were dead at the end of five years and only 32% were alive without clinical evidence of recurrence or metastasis. Only 2 of 29 patients receiving palliative treatment survived five years, while 32 of 56 patients who had the thyroid cancer removed survived five years. The prognosis could be improved by prompt surgical treatment of thyroid nodules, frozen section study at operation, and total thyroidectomy for cancer.

Acute Cholecystitis Following the Surgical Treatment of Unrelated Disease. F. Glenn and G. E. Wantz. Surg. Gynec. & Obst. **102:**145-153 (Feb.) 1956 [Chicago].

The authors review observations on 18 patients at the New York Hospital between Sept. 1, 1946, and June 30, 1955. The group included an equal number of men and women. The average age of the men was 65.9 years and of the women 55.5 years. The primary diagnoses included appendicitis, carcinoma of the colon, prostatic hypertrophy, carcinoma of the face, pyelonephritis, varicose veins, cataract, retinal detachment, and inguinal hernia. Postoperative cholecystitis developed between 2 and 18 days after the primary operation. Important features of this type of cholecystitis are that there are usually no calculi in the gallbladder and that there is a relationship to the resumption of oral food intake after prolonged fasting. Acute inflammation of various degrees was believed to be superimposed on the chronically inflamed gallbladder. Prevention of acute postoperative cholecystitis is important, because it is a serious complication, particularly in older patients. Early surgical therapy of cholelithiasis provides the best method of interrupting biliary tract disease and obviating acute cholecystitis following unrelated operations. The next best approach is prophylactic measures directed at preventing the accumulation of large amounts of concentrated bile in the gallbladder with a consequent sudden and vigorous attempt to empty itself. Prolonged periods of fasting should be avoided whenever possible. Early mobilization after operation aids in the reestablishment of normal intestinal function. Drugs that retard bile flow from the gallbladder to the duodenum should be used with caution. Associated acute systemic disease and infection should be vigorously combated. The resumption of oral intake of food after an operation should be begun by giving small amounts of food low in fat and cholesterol. A coddled egg, so frequently given to the postoperative patient, is often the

offending agent. Cholecystectomy is the treatment of choice for postoperative cholecystitis, but cholecystostomy may be indicated.

Multiple Deficiency Syndromes After Gastrectomy for Ulcer. M. Morin, J. Graveleau, J. Lafon and others. Presse méd. **63:** 1798-1801 (Dec. 25) 1955 (In French) [Paris, France].

Deficiency syndromes after gastrectomy are being reported more and more commonly. Within three years the authors saw 25 cases that, while unaccompanied by cachexia and massive edema, definitely indicated multiple deficiency. Fifteen of the patients, 14 of them men, are reported on here. Two had had total gastrectomy and the others resection of two-thirds of the stomach with gastrojejunal anastomosis (one with gastroduodenal anastomosis). The large majority were in the habit of consuming three-fourths to one liter of wine per day. The average age of the group was 47 years. The syndrome usually had its onset after a period of months or years following operation, during which time the patient had few, if any, complaints relative to the digestive tract. The first symptoms noted were most often asthenia and weight loss, and later edema or diarrhea. The asthenia prevented normal work in most instances, and was not only physical but intellectual and sexual as well. In fact, impotence may be the first symptom. Marked anorexia was a constant feature of these cases. Skin changes were so characteristic as to be diagnostic in themselves: the skin was atrophic, glabrous, and pale or gray, with wrinkles around the mouth. Drying and loss of hair were common. The alterations seen in the hepatic parenchyma on needle biopsy of these patients (on autopsy in three) resemble those seen in other malnutritional states: some had actual pigmentary cirrhosis, while the others had only minimal hepatic parenchymal siderosis. The authors believe that the pigment is first deposited in the periportal cells, extension to Kupffer's cells occurring later. The liver cells contained a nonidentifiable nonferrous pigment. Treatment of the postgastrectomy deficiency syndrome leaves much to be desired. It is mostly symptomatic and supportive, and the patient is usually left too debilitated to resume his normal activities. This last fact ought to be borne in mind when gastrectomy for peptic ulcer is under consideration; it is especially important in the case of a patient whose ulcer forces him to interrupt his work only a few weeks a year.

Carcinoma of the Pancreas. L. C. Sanders and R. McBurney. Am. J. Gastroenterol. **25:**59-65 (Jan.) 1956 [New York].

Between 1933 and 1950 a diagnosis of carcinoma of the pancreas was made in 85 patients. In 22 patients only a clinical diagnosis was made; the tumors were inoperable, and none of the patients lived longer than four months. In three patients operation revealed carcinoma of stomach and pancreas, but it was impossible to ascertain whether the primary lesion originated in the stomach and perforated onto the pancreas or began in the pancreas and perforated onto the wall of the stomach. The other 60 patients who were operated on included 38 men and 22 women. The youngest was 40 years old and the oldest 80. Forty-two of these patients complained of moderately severe pain; 18 had no pain. Forty-seven were jaundiced. All patients had indigestion, nausea, or vomiting. At the time of operation, symptoms had been present for an average of four months (range two weeks to 18 months). Weight loss occurred in all patients and ranged from 10 to 45 lb. Roentgenologic examination was omitted in 20 patients, all of whom had jaundice and a palpable mass in the upper abdomen. Roentgenologic examination of the gastrointestinal tract gave negative results in 29 patients, and evidence in the other 11 patients consisted of deformity of the duodenum, stomach, or colon as the result of extension of the tumor to one of these organs. A large duodenal loop was seen in five patients. The tumor was found in the head of the pancreas in 30, in the body in 27, and in the tail in three patients. None of these last three was jaundiced, and the pain was located in the back and the left loin. Anastomosis of the biliary tract to the duodenum or the jejunum could be carried out in 32 of the 60 patients. The remaining 28 proved hopelessly inoperable. Four of the patients died within a month after operation, only six survived more than a year, and none lived more than 31 months. The authors believe that patients presenting vague upper abdominal pain with loss of appetite and weight and with negative laboratory and x-ray studies should have an abdominal exploration if early diagnosis of carcinoma of the pancreas is to be made and radical resection is to become a curative procedure.

Adrenal Cortex Surgery: II. Technical Problems and Replacement Therapy. J. Govaerts, A. Gelin, P. A. Bastenie and J. R. M. Franckson. Acta chir. belg. **54:**649-662 (Oct.) 1955 (In French) [Brussels, Belgium].

A series of 25 patients underwent operations on their adrenal cortexes. Four had adrenal cortical hyperfunction (Cushing's syndrome); eight, the adrenogenital syndrome; one (a woman), diabetes with hirsutism (Achard-Thiers syndrome); four, arterial hypertension; four, arteritis; two, diabetes mellitus; and two, metastases from mammary carcinoma. The operations performed were unilateral adrenalectomy in 13, subtotal adrenalectomy (90% of tissue removed) in 4, and total adrenalectomy in 8. One death occurred after acute adrenal crisis a few hours after operation. Mild adrenal insufficiency was observed in two. The survivors resumed a normal life, with most of them returning to their former activities. The two most important factors in successful treatment are preoperative preparation of the patients and restoration of hormone balance after operation. Two particularly severe dangers threaten the surgical patient: hypotension and acute adrenal crisis. The opportune administration of norepinephrine will forestall the first, and the second can be combated by the administration of 200 mg. of cortisone, sometimes combined with minimal doses of desoxycorticosterone, two days before and two days after the operation. The dose is progressively reduced so as to attain the maintenance level (about 25 mg. of cortisone daily) within two weeks.

NEUROLOGY & PSYCHIATRY

Thrombosis of the Basilar Artery with Softenings in the Cerebellum and Brain Stem Due to Manipulation of the Neck. F. R. Ford and D. Clark. Bull. Johns Hopkins Hosp. **98:**37-42 (Jan.) 1956 [Baltimore].

Ford and Clark direct attention to the danger of excessive rotation of the head by presenting the histories of two patients. The first patient was a 37-year-old man in whom there developed signs of damage to the brain stem immediately after his wife twisted his head. The course was progressive, and he died about 60 hours later. Softenings were found in the cerebellum and brain stem, and there was a thrombus in the basilar artery. The second patient was a 41-year-old man who was treated by a chiropractor who, after massaging his scalp for a while, suddenly twisted his head to one side. The patient became unconscious and was taken to a hospital where he vomited repeatedly. He was unconscious for 24 hours. There was paralysis of the left arm and leg and ataxia of the right arm and leg. He could not swallow, and his speech was indistinct. There was retention of urine, and catheterization was required. There was deafness in the right ear and no sweating on the right side of the face. Later, it was discovered that there was loss of sensibility on the left side of the body. He could walk with help within two or three weeks, and in two months he could walk alone. Disability still persisted 10 years later. The authors point out that in 1947 Pratt-Thomas and Berger published an article describing three cases in which death followed chiropractic manipulations. Two of these cases are identical in all essential features with their cases. This seems to be a well-defined syndrome. Thrombosis of the basilar artery and some of its branches was found in the three cases in which autopsy was done. The patient who survived showed signs almost identical with those in the patients who died. No dislocation or fracture of the cervical spine was found in roentgenograms or at autopsy. The skull was not fractured in any case, and the scalp showed no bruises. There was no evidence that any of these patients had received a blow on the head. The injuries were not due to simple direct trauma but to interruption of the circulation. Vas-

cular disease does not seem to play any role in these cases. In the three patients on whom autopsy was performed, the arteries were normal. In all cases the symptoms followed manipulation of the neck. Excessive rotation of the neck results in damage to the vertebral arteries with interruption of the blood flow into the basilar system and thrombosis due to stasis. There is some reason to believe that such excessive rotation is easily carried out only in persons whose odontoid ligaments are too lax or easily ruptured.

Treatment of Purulent Meningitis. C. M. Aarsvold. Tidsskr. norske lægefor. **75:**854-856 (Dec. 15) 1955 (In Norwegian) [Oslo, Norway].

Purulent meningitis is usually due to Neisseria meningitidis, Hemophilus influenzae, or pneumococci. Meningitis due to N. meningitidis is probably still the most frequent form. It occurs mostly in childhood, but can occur at all ages. Meningitis due to H. influenzae is a typical disease of childhood, while that caused by pneumococci occurs mainly in adults. The meninges are well vascularized and should be readily accessible to treatment with antibiotics, but the subdural space, where the infection causes the greatest damage and where it may persist, is more difficult to reach. To obtain the highest possible concentration in the spinal fluid, massive doses of different antibiotics are given. Toxic damage occurs more easily with massive doses of sulfonamides and chloramphenicol, but the doses are applied for only a few days. Massive doses are primarily important with penicillin. Some bacteria are stimulated by small amounts of penicillin. N. meningitidis is sensitive to sulfonamides, but massive doses are administered to conquer the infections as rapidly as possible and avoid complications. Adults receive an initial dose of eight tablets, then two tablets every four hours; children from 3 to 6 years of age are given half the dose and children from 1 to 3 years one-fourth the dose. Abundant fluids and sodium bicarbonate are given. In grave cases, large doses of crystalline penicillin are applied in addition to the sulfonamides, usually one million units every third hour until the temperature is normal, after which treatment with sulfonamides is continued until the patient has been afebrile for some days and the cell count in the spinal fluid approaches normal values. The general condition changes completely in the course of less than 24 hours. The results of the treatment are good. In epidemic cerebrospinal meningitis (Waterhouse-Friderichsen syndrome) the prognosis is still unfavorable, but with use of the combination of sulfonamides, penicillin, and ACTH, recovery has followed in grave cases. When the causative agent cannot be determined, treatment is given as for meningitis due to N. meningitidis, with good effect. In meningitis due to H. influenzae, chloramphenicol is the best agent. If the presence of H. influenzae is demonstrated in direct preparation on spinal puncture, chloramphenicol is given at once, but resistance determination is made because of the varying sensitivity of the different Hemophilus strains to antibiotics. A daily dose of 100 mg. of chloramphenicol per kilogram of body weight is administered, apportioned in four doses until the temperature falls. Because of the danger of toxic damage to the bone marrow, the total dose must be limited to 25 gm. for adults and correspondingly less for children. Treatment is then continued with sulfonamides every fourth hour, in the same dosage as in treatment of meningitis caused by N. meningitidis, and 40 mg. of streptomycin per kilogram of body weight, apportioned in two doses daily. Since meningitis due to H. influenzae tends to recur, treatment with sulfonamides and streptomycin is continued until the patient has been afebrile about a week and the cell count in the spinal fluid is about normal. Dramatic improvement is usually seen in the course of 24 hours. The late results are good. In pneumococcus meningitis, one million units of crystalline penicillin is given every other hour, with bactericidal effect on both pneumococci and hemolytic streptococci. In addition, the patient receives 4 gm. of sulfonamide to begin with, followed by 1 gm. every fourth hour. Treatment is continued until the patient has been afebrile for three or four days and the cell count in the spinal fluid approaches normal. To prevent renal complications, sodium bicarbonate and abundant fluids are given. Here also the results are good.

Evaluation of Poliomyelitis Vaccination in Massachusetts. A. S. Pope, R. F. Feemster, D. E. Rosengard and others. New England J. Med. **254:**110-117 (Jan. 19) 1956 [Boston].

An unprecedented epidemic of poliomyelitis affecting 3,819 patients in Massachusetts in 1955 provided an opportunity to evaluate the effectiveness of poliomyelitis vaccine in an epidemic situation. The epidemic was caused almost exclusively by type 1 virus. The epidemic was characterized by a reversal of the downward trend in the percentage of cases in persons aged less than 5 years from about 19% in recent years to 30.6% in 1955. The rise among those aged less than 5 years was compensated by a drop of about 8% in the group between the ages of 10 and 14 years and of only about 3% in those aged 15 years and over. The highest number (318 cases) occurred in the 5-year-olds, with rates almost as high in 3-year-olds (304 cases) and 4-year-olds (298 cases). The rates for those 6, 7, 8, and 9 years of age were much lower, while in the last epidemic in 1949 the highest rates occurred among the patients aged 6, 7, and 9 years. The most convincing evidence that the live virus in the Salk vaccine used in May and June, 1955, did not set off the epidemic of poliomyelitis in Massachusetts children who received the vaccine comes from 157 of 351 cities and towns, all of which participated in the vaccination program. They did not report any cases before Sept. 1, more than three months after the vaccine was administered. Only three lots of poliomyelitis vaccine, all from one manufacturer, came into Massachusetts for use in first and second grade children. One of these lots was the only one used in Boston, and it also went into every part of the state. If this lot started the epidemic in Boston, it should have started foci in all parts of the state. Other vials of the same lot and of the two other small lots used in Massachusetts went to Minnesota and the state of New York. There is no indication that any of the three lots started foci in the other states. A total of 130 cases occurred among the 137,968 children who received one dose of vaccine, an attack rate of 94.5 per 100,000. Fifteen cases occurred among the 22,673 children who received two or more doses, a rate of 66.4 per 100,000. The rate among the 278,532 unvaccinated children (553 cases) was 198.2 per 100,000. The effectiveness of the vaccine against all types of poliomyelitis, bulbar, paralytic, and nonparalytic included, was 53%. Against paralytic types only the effectiveness was 60%. These figures parallel those of Francis and his associates regarding protection against type 1 poliomyelitis.

GYNECOLOGY & OBSTETRICS

Granulosa Cell Carcinoma in the Third Trimester of Pregnancy: Abruptio Placentae, Hemoperitoneum and Intestinal Obstruction. M. E. Barrett. J. M. A. Alabama **25:**153-157 (Jan.) 1956 [Montgomery, Ala.].

After summarizing eight previously reported cases of granulosa cell tumor complicating the third trimester of pregnancy, the author describes an additional case in a 17-year-old primigravida. When first seen on Sept. 8, 1952, she complained of pain. She appeared to be in her 28th week of gestation. Severe hirsutism involved the face, trunk, and extremities. The entire right side of the abdomen was tender. Three weeks later the patient was readmitted to the hospital with a moderately severe upper abdominal distention, severe nausea, vomiting, and dehydration. An intravenous pyelogram showed poor concentration of dye in the right kidney, with mild bilateral hydronephrosis and with evidence of chronic pyelonephritis. The patient felt relief of pain in the right side of the abdomen immediately after the drainage of the right kidney. The possibility of abdominal pregnancy had been ruled out. The right side of the abdomen appeared slightly larger than the left. The patient was discharged from the hospital Oct. 3, 1952. Forty-eight hours later she had a sudden severe pain in the right side of the abdomen and in the suprapubic region. She had an urgent desire to void and to defecate, and she passed some 180 to 200 cc. of bright red blood from the vagina. Five hours after the onset of the pain and bleeding, the patient

delivered a premature, 1,400-gm. (3.1-lb.) infant, with the placenta and membranes intact. Even after delivery the abdomen appeared as distended as before. After the distention was relieved by Wangensteen suction, a well-defined mass was palpable, and the radiologist suggested that it was probably an ovarian neoplasm. Laparotomy revealed that the right adnexa were incorporated in a partially solid and partially cystic mass 23 by 15 by 15 cm. During the attempt to separate the cystic mass from an area of plastic exudate on the posterior peritoneum, a large amount of serosanguineous fluid escaped into the peritoneal cavity, 2,000 cc. being aspirated. The tumor was identified as a granulosa cell tumor of the immature solid type. In 1954, the patient had another, uneventful pregnancy. At the end of the third year after removal of the tumor the patient was apparently well. The prognosis in this case is guarded, and she should be kept under observation for many years. Granulosa cell tumor may be present and cause no symptoms. It may cause an unexplained obstruction to what was anticipated as a normal delivery. It may be accidentally discovered during the postpartum period. Or it may mimic disease of almost any intra-abdominal organ. About all one can do is to keep the condition in mind as a possibility in the differential diagnosis of the complications of the third trimester of pregnancy.

Endometriosis on Old Laparotomy Scar, Appearing Ten Years After Appendectomy. C. Fernandez-Ruiz. Cir. ginec. y urol. **9**:326-330 (Sept.-Oct.) 1955 (In Spanish) [Madrid, Spain].

A 38-year-old woman requested treatment for several small nodules that had recently appeared on a laparotomy scar. Her only child, 6 years old, was born in normal delivery. The patient had had an appendectomy for acute appendicitis with perforation 10 years prior to consultation. She stated that after the operation a large tube was used for drainage. The laparotomy scar never bled, but since the appearance of the nodules it had become reddish, bluish, and painful during menstruation. The nodules were constantly painful and extremely painful during menstruation. At gynecologic examination, the uterus was found to be normal but the ovaries were enlarged. A biopsy of the nodules showed endometriosis of the cicatricial tissues. An operation for extirpation of the scar containing the endometrioma and castration was planned. Endometriosis of the right ovary, bilateral salpingitis, and a cystic left ovary were observed during the operation. Subtotal hysterectomy and bilateral adnexectomy were performed. Endometrioma in the resected scar occupied all the cicatricial and parietal tissues down to the aponeurosis, sparing the peritoneum. Pathological examination of the removed adnexa showed endometriosis of the right ovary, chronic perioophoritis, and bilateral chronic salpingitis. Complete cure followed the operation. The author believes that endometriosis of the right ovary was present at the time of appendectomy and the condition was transplanted from the ovary to the laparotomy scar through the drainage tube.

Pelvic Findings in Women Past the Age of 65. D. M. Farley and J. R. Wolff. J. Am. Geriatrics Soc. **4**:1-7 (Jan.) 1956 [Baltimore].

The authors reviewed observations on 209 women 65 years of age and over who came to the Cancer Prevention Center of Chicago for examination during the past two years. Only presumably healthy patients are admitted for study to this center. When abnormalities are found they are reported to the patient's family doctor. Well patients are told to see their physician in one year and to have him repeat this yearly health check-up. Seventy-three (35%) of the 209 presumably healthy women reported some distress related to the pelvis when simply asked about a complaint, and when a detailed history was taken, 158 (76%) admitted pelvic symptoms. Complaints connected with the rectum were most frequent. Fifty-eight women complained of constipation and 53 of hemorrhoids. Few of the women complained initially about bladder symptoms, but detailed questioning revealed many. Urinary frequency and urgency were common, nocturia was reported by 88, stress incontinence by 30, and dysuria by 18 patients. Symptoms related to the genitalia were at first described by 18 patients, who mentioned pruritus, leukorrhea, and bleeding. Fifty-six patients admitted similar symptoms in response to detailed questioning; 18 had leukorrhea, 13 had lower abdominal pain, 8 had vaginal bleeding, 6 had pruritus, 5 had an abnormal mass, and 2 had uterine prolapse. Some of the women had general complaints, particularly nervousness, fatigue, headaches, irritability, hot flushes, and weight loss, that could possibly be related to pelvic disease. Pelvic examination of these women revealed senile atrophy in 67%. It was most apparent in the vaginal mucosa and the cervix and less common in the labia or in the uterus. The tissues were usually described as simply atrophic or senile, occasionally as reddened, shiny, dry, telangiectatic, or at times as inflamed or "flea-bitten." Atrophy had progressed to the point of adhesive vaginitis in eight cases as a result of lowered resistance to infection with subsequent adhesive scarring. Other types of vulvar and anal dermatological disorders were noted in 12 cases and what appeared to be leukoplakia in 5. Pelvic relaxations were observed in 100 (48%) of the patients, generally as the result of childbirth injuries. Cystocele was noted in slightly over a third of the patients, rectocele in a fourth, and urethrocele in about a sixth. Perineal relaxation was common, but uterine prolapse was seen only four times. A cervical smear for cytological examination was obtained for every woman. Carcinoma of the cervix was present in one, and adenocarcinoma of the endometrium was detected on curettage in another. In addition to these two cancers of the genitalia, seven other cancers were detected as the result of the examination or the follow-up studies. There were four cancers in the rectum, one in the breast, one in the nose, and one in the bladder. This shows that of the presumably well women over 65 years of age who came for study, at least 1 in 23 had cancer.

PHYSICAL MEDICINE

Dynamic Exercises After Lower Extremity Amputation: Rehabilitation of the Elderly Amputee. O. Eisert. Geriatrics **11**:65-70 (Feb.) 1956 [Minneapolis].

A series of preprosthetic coordination exercises for lower extremity amputees has been devised by the author. The exercises are divided into eight major classifications, namely, stump extension with anterior pelvic thrust, adduction of the internally rotated stump with lateral pelvic thrust, adduction and internal rotation of the extended stump, adduction and internal rotation of the stump with oblique flexion of the trunk, stump abduction with pelvic elevation, stump movements in response to disturbance of sitting posture, rotation of the pelvis about the support extremity, and below-knee exercises. The exercises are simple and require little effort by the patient. They are especially suitable in the treatment of the elderly amputee for whom motivation and expenditure of energy are important factors. The exercises are multipurpose in character: muscles are strengthened and retrained to act in a coordinated manner; circulation is improved and stump shrinkage encouraged; and contractures are prevented or corrected. Movements similar to those used in actual walking are taught so that use of the prosthesis is relatively easy. The parallel bars are used sparingly. The patient learns to walk at first with his arms elevated in order to maintain the correct posture. In a few weeks, he is able to walk well enough for discharge from the hospital. Motivation is stimulated by a close physician-patient relationship. Group therapy is of great importance in that it introduces the element of competition. The dynamic exercises are especially useful because they can be performed simultaneously by a number of patients. Exhaustion must be guarded against. The amount of activity should be varied according to the tolerance of the patient. The patient should function at his optimum capacity. It is especially important to consider the condition of the remaining limb. Circulatory reserve should be determined, and, if it is poor, a delay or cancellation of the fitting of the prosthesis may be necessary. In general, age in itself is no bar to the successful rehabilitation of the amputee.

BOOK REVIEWS

Modern Nutrition in Health and Disease: Dietotherapy. Edited by Michael G. Wohl, M.D., Chief of Human Nutrition, Division of Biological Chemistry, Hahnemann Medical College and Hospital, Philadelphia, and Robert S. Goodhart, M.D., Scientific Director, the National Vitamin Foundation, Inc., New York. With 55 contributors. [New edition.] Cloth. $18.50. Pp. 1062, with 80 illustrations. Lea & Febiger, 600 Washington Sq., Philadelphia 6, 1955.

This volume by 55 contributors presents a wide variety of considerations of nutritional physiology and diet therapy. It is a reference work that should be useful to many physicians with special interest in diseases of metabolism and nutrition. Seventeen chapters deal with the nutrients and with nutritional physiology, including appetite and hunger. The remaining chapters are concerned with nutrition in disease and in a number of physiological states, including pregnancy, infancy, and old age. The appendix consists of a table of food composition, a one-page discussion of beverages, a plan for a full diet, and a table of measures. The eminence and active investigative interest of many of the contributors assures authoritative treatment of most subjects, but there exists the unevenness of purpose, scope, and critical approach that often characterizes compilations. Most chapters are extensively documented. Some, however, are less an effort to review a field than to present the writer's individual point of view. This book is a decided improvement over the earlier "Dietotherapy." It presents and discusses many types of therapeutic diets, including the use of exchanges, but it is not intended as a diet manual. It should prove useful to physicians, medical students, and others who wish a reference book on the subject.

Biochemistry and the Central Nervous System. By Henry McIlwain, Ph.D., D.Sc., Professor of Biochemistry in University of London at Institute of Psychiatry (British Postgraduate Medical Federation), London, England. Cloth. $9.50. Pp. 272, with 43 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6; J & A. Churchill Ltd., 104 Gloucester Pl., Portman Sq., London, W.1., England, 1955.

This textbook on the chemical structure and changes of the nervous system is directed to the advanced student of biochemistry who is interested particularly in the difficult and specialized field of neurochemistry. Unlike the recent monumental symposium, "Neurochemistry: The Chemical Basis of Brain and Nerve," edited by Elliott, Page, and Quastel, and reviewed in THE JOURNAL, Nov. 12, 1955, page 1169, it is a well-integrated volume, written from the viewpoint of a single author. It opens with a competent and succinct general discussion of the metabolism of the intact brain, passes on to a description of the chemical composition of the brain, of the energy transformations taking place in the animal with degradation of high energy compounds during activity and their resynthesis during rest, of chemical and enzymatic events during development of the nervous system, and of the important roles of acetylcholine, sympathin, serotonin, and histamine phosphate and closes with a treatment of depressants, convulsants, and anticonvulsants. A final chapter on speed of chemical change in the brain is most stimulating and testifies to the author's clinical and philosophical applications of his specialized knowledge. McIlwain surmises that the bulk of energy expenditures of the nervous system are devoted to (1) maintaining differential distribution of sodium and potassium ions, (2) effecting synaptic transmission and other intercellular interactions, and (3) achieving renewal of the cell itself. He strikingly reminds us that processes in the nervous system vary in speed from the 10^{-4} second required for rise and fall of action potential to the 10^{5} seconds that may be used in adaptation. One wonders why the author stops at 10^{5} seconds, less than 30 hours, when 10^{9} seconds would represent a lifetime of less than 35 years of adaptation. The task of the brain to integrate processes of such varying speed involves a major part of its metabolic activities. The author believes that the slower processes of learning or adaptation may involve structural change, perhaps at the neuronal terminals or in some balance of reaction rates such as a change in threshold. The book holds great interest for the thoughtful clinician. Though demanding much knowledge of biochemistry, it touches intimately on numerous clinical problems, including diabetes and other metabolic diseases, the avitaminoses, cerebral degenerations, convulsive disorders, and the pharmacology of sedation. It is a book to be studied, not scanned. Its style, although clear, is compressed and heavy. The index is complete and accurate, the bibliography by chapters wisely and judiciously selective, and the format and typography exemplary.

Health, Culture and Community: Case Studies of Public Reactions to Health Programs. Edited by Benjamin D. Paul. With collaboration of Walter B. Miller. Cloth. $5. Pp. 493. Russell Sage Foundation, 505 Park Ave., New York 22, 1955.

All physicians are at heart missionaries engaged in persuading a patient, a family, or a community to adopt a health program that they believe will be beneficial. Acceptance of the program presents a problem in the art of salesmanship that is not always successful, as in the case of fluoridation. This volume presents 16 case studies that have been used in teaching seminars at the Harvard School of Public Health. Community reactions to the introduction of many types of health programs are presented by those who participated in them. Successes and particularly failures are analyzed with care. One derives the same benefit as from a careful autopsy, only the person performing the autopsy in this instance is a social anthropologist explaining what the behavioral sciences have to offer. Examples cover all kinds of people, from Zulu tribes to the residents of suburban Boston. It becomes clear that acceptance of a program depends on the ability of the health worker to understand the habits, prejudices, and superstitions—in short the culture—of the community. Vehicles of service and education must be found that have meaning in the culture of the people. The professional health worker, of whom the physician is one, tends to see the world revolving around health. These fascinating stories cannot but convince a physician that he must learn to see health from the standpoint of the man in the community. Programs that seek to alter health practices and attitudes constitute efforts to change the local culture. The editor has succeeded in obtaining a uniform manner of presentation with a concise summary by each author, to which he has added a foreword, in each instance connecting the case with the main theme. The book is divided into six parts dealing with reeducating the community, reaction of crises, sex patterns and population problems, effects of social segmentation, vehicles of health administration, and combining services and research. The editor contributes a summary of the contribution of social anthropology to health. Each contributor gives a few references to original sources, indicating their nature and particular value.

Cardiac Diagnosis: A Physiologic Approach. By Robert F. Rushmer, M.D., Associate Professor of Physiology and Biophysics, University of Washington Medical School, Seattle. Cloth. $11.50. Pp. 447, with illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1955.

It is interesting that physiologists so often have a practical approach to clinical problems. Sir Thomas Lewis was an outstanding example of this. Dr. Rushmer's approach is similar to his. This volume should be valuable to medical students, since it links the structure of the cardiovascular system with its function in the normal subject and describes the changes that occur in various cardiac and vascular diseases. It should be valuable to the general practitioner in his daily problems in diagnosis, as it is written simply, without confusing technical terminology. It is an excellent and practical review of the problems of diagnosis in cardiovascular diseases that should interest the internist and cardiologist. The illustrations are fascinating.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

QUERIES AND MINOR NOTES

POSTCORONARY BLOOD DONORS

To the Editor:—*Two patients with proved coronary disease wonder if it will ever be possible for them to donate blood. One of these men has given over a gallon of blood. I ask this because of the emotional impact one creates in telling a patient that he has made an excellent recovery and then, in the next breath, advising him against donation of blood because of possible creation of disturbance of cardiac circulation.*

George E. Quinn, M.D., Farmington, N. H.

Answer.—As indicated above, one patient has already demonstrated that he can give transfusions without suffering any untoward effect as a direct result of the transfusion. The question is interesting in that the negative answer does not concern actual physiological changes as much as possible legal complications. The only conceivable risk, other than those inherent in donating blood generally, would be the possibility of the donor suffering from a sudden drop in blood pressure, with a resultant thrombosis in a narrowed coronary artery or elsewhere in the body. However, if the physician approves the giving of blood, and, if during or shortly thereafter any untoward developments occur, even though coincidentally, he might be placed in a very unfortunate position in reference to the family of the patient. It might be stated to the patient that it was considered wise to conserve his health by avoiding any possible disturbing influence, including the donating of blood. This should not alarm a sensible patient.

ADVISABILITY OF PREGNANCY AFTER OLD ATTACK OF POLIOMYELITIS

To the Editor:—*A 38-year-old woman, who is contemplating marriage, wonders about the advisability of her having children. At 17 years of age she had poliomyelitis and was left with weak trunk muscles. A fascial transplant was made to the abdomen, according to the method devised by Dr. C. Lowman of the Orthopedic Hospital of Los Angeles. Since this gave her an abdomen with almost board-like rigidity, she was advised at that time that she should never have children. She has a notable weakness of her back muscles, too. If she did bear a child would she be greatly handicapped by trunk weakness again?*

M.D., Alaska.

Answer.—This patient would be at least 39 or 40 years old when she has a baby, if she conceives shortly after marriage. While having a first baby at 40 years of age is not a serious problem by any means, the patient will have to be under the care of a competent obstetrician, both because of her age and her physical condition. Almost certainly the transplanted fascia will stretch under the influence of the hormones elaborated during pregnancy and the stress and strain that are associated with pregnancy, just as fascia would stretch in a normal abdominal wall; hence, it will not resist the growing uterus. However, this fascia may not return to the state in which it is at present, thereby leaving a weakened abdominal wall. Furthermore, there is great likelihood that the weakness in the back muscles will be aggravated by the gestation and the postural changes associated with pregnancy, and this increased weakness may persist after delivery. In view of these factors it is advisable that the patient consult with an experienced obstetrician and an orthopedic specialist and have them decide the question of pregnancy.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

TINNITUS AURIUM

To the Editor:—*Can anything be done for the relief of tinnitus aurium? A patient has continuous roaring sounds in both ears. In quiet surroundings the suffering is beyond endurance. All causative factors—myringitis, labyrinthitis, petrositis, otitis media, otosclerosis, Ménière's syndrome, hypertension, eustachian tube obstruction, endocrine disturbances, and other possible causes—have been eliminated. There is no cerumen and no deafness. The usual therapeutic measures gave no relief. Everything has been tried, except nicotinic acid, which, in the light of my clinical experience, is of doubtful value.*

Maurice Chideckel, M.D., Baltimore.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—Nothing can be done for tinnitus aurium from a neurological or neurosurgical standpoint. Even division of the auditory nerve usually fails to relieve this condition.

Answer.—Tinnitus is a frequent symptom of ear disease usually associated with a measurable hearing impairment. In the case of conductive hearing losses, such as perforated tympanic membranes and otosclerotic stapes fixation, therapy to improve the hearing as a rule lessens or relieves the tinnitus. In the case of perceptive or nerve loss where treatment is not effective for the hearing there is no effective treatment for the tinnitus. Tinnitus in the presence of normal hearing suggests a disturbance outside of the ears such as a cerebral aneurysm or psychogenic disturbance. The latter is not infrequent, and, as in other psychogenic complaints, the inability of the patient to become accustomed to the tinnitus is characteristic. In the case cited a psychiatric consultation would appear to be indicated.

FREE TESTOSTERONE VERSUS METHYLTESTOSTERONE

To the Editor:—*Please discuss the uses and actions of free testosterone versus methyltestosterone. I have followed Greenblatt who does not favor the use of methyltestosterone when muscle-building action is desired. Is not methyltestosterone a producer of creatinuria, and is it not therefore contraindicated in hyperthyroid states? I have always used testosterone propionate, although I suppose free testosterone in the form of Linguets would be satisfactory. All sorts of preparations are being marketed, and many containing methyltestosterone make claims that are highly questionable. For instance, in chronic ulcerative colitis, where one might want to use a medicament for its adjustive anabolic effect, testosterone or testosterone propionate would be effective but methyltestosterone highly improper.*

Robert N. Monfort, M.D., East Lansing, Mich.

Answer.—It is quite true that the administration of methyltestosterone to humans is followed by marked creatinuria, a phenomenon found only in man and not in experimental animals. This phenomenon may be partially abolished if, to the regimen of the patient being treated with methyltestosterone, testosterone is added. It must not be supposed, however, that methyltestosterone is much less anabolic than testosterone, for the effects on nitrogen retention and weight are about of the same magnitude. Aside from that following methyltestosterone therapy, creatine appears in the urine in large amounts in conditions that are accompanied by muscular wasting, notably progressive muscular dystrophy and thyrotoxicosis. In such instances it has been shown that the creatine that appeared in urine was freshly synthesized by the liver and then failed to be incorporated into the diseased muscles. On the other hand, however, the site of increased creatine synthesis after methyltestosterone therapy

is thought to be the kidney, for this effect is abolished in severe nephritis, while hepatic disease does not interfere with rise in creatine output. Clinical experience in the management of patients with thyrotoxicosis suggests that testosterone (either free or in the form of one of its esters) lessens nitrogen loss and increases strength and well-being, while methyltestosterone appears to aggravate the symptoms. Jaundice also has been reported after methyltestosterone therapy but not after other forms of testosterone medication. In spite of the few handicaps of methyltestosterone therapy mentioned, it remains an important and potent tool in the hormonal armamentarium, being the only generally effective form of androgen medication that can be given orally. Free testosterone and testosterone propionate may be administered orally but only by the sublingual or buccal routes, and here the effectiveness is in direct ratio to the patient's ability to avoid frequent swallowing while the Linguet or buccal tablet is in place. In general, intramuscular injections of free testosterone or its esters or subcutaneous implantation of pellets of testosterone remain the most satisfactory forms of androgen administration.

PELVIC TUBERCULOSIS

To the Editor:—*The answer to a question on the management of pelvic tuberculosis in* The Journal, *Jan. 14, 1956, page 152, recommended therapy that is inadequate by current standards. Two drug regimens were suggested, and it was stated that one of them "should be given for four months"; the alternative regimen was recommended "for at least two months." The response went on to state: "All the tests for tuberculosis should be repeated every 6 months because not infrequently there is a recurrence after 12 to 24 months." I agree with the latter statement, and would suggest that more adequate therapy be given in the first place. Relapse rates in all forms of tuberculosis have always been too high, but we now have the means to reduce them. Briefly, these consist of more prolonged antimicrobial therapy for all cases of active tuberculosis. Hite, Bloch, and I have reported a relapse rate of only 1.7% in a series of 172 patients who were treated one to four years with chemotherapy and surgery, where indicated* (A. M. A. Arch. Int. Med. **96**:*470-477 [Oct.] 1955). Toxicity of the drugs, inconvenience, and expense of long-term chemotherapy are all outweighed in importance by the possibility of relapse if treatment is discontinued prematurely. Tuberculosis takes a long time to heal, and all investigators agree that, on the whole, the longer drug treatment is continued the better are the results.*

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To the Editor:—*In* The Journal, *Jan. 14, 1956, page 152, regarding the answer to a question on treatment and management of pelvic tuberculosis, I am rather confident that, while there is considerable divergence of opinion on the management of tuberculosis in general, few men in the field would approach the problem in such a casual and provincial manner. It has been known for years that such short-term therapy as was recommended, ranging from two to four months, results in a large percentage of relapses, regardless of the site of the tuberculous infection. A more generally accepted course of therapy would range from 12 to 24 months, 18 months being probably the most generally accepted period of time at present. The inquiring physician should have been advised to more actively investigate the urinary tract for possible tuberculous disease prior to masking any possible urinary tuberculous infection by the use of antibiotics. Pelvic tuberculosis represents a secondary or metastatic focus of disease and must not be approached as an isolated and localized problem. In all instances tuberculosis should be considered as a systemic disease, regardless of where the major focus may become manifest.*

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PAPILLARY CARCINOMA OF THYROID

To the Editor:—*In the Queries and Minor Notes section of* The Journal, *Jan. 7, 1956, page 89, papillary carcinoma of the thyroid is considered a benign disease that can be treated with limited operation or even desiccated thyroid. This is one concept of this disease, but it is by no means generally accepted. True carcinoma of the thyroid, whether papillary or not, is almost always an admixture of different histological types and clinical manifestations. In addition, even low-grade papillary cancer of the thyroid can and does kill some patients. Dr. Edgar Frazell and I have documented this in an article entitled "Invasive Papillary Cancer of the Thyroid"* (J. Clin. Endocrinol. **14**:*1362, 1954*). *Although the natural history of thyroid cancer is unknown and although there are admittedly patients with papillary thyroid cancer who survive with little or no treatment for decades, it is dangerous to assume that any given patient, particularly in the younger age group, can survive with inadequate surgery or medical treatment.*

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To the Editor:—*In* The Journal, *Jan. 7, page 89, there is a short answer to a question regarding the treatment of papillary carcinoma of the thyroid. Many clinicians whose primary interest is in malignant disease would object to the answer as being inaccurate. In all fairness to the physician who made the inquiry, I believe he should be referred to the recent issue of* Cancer (**8**:*1164, 1955*), *wherein this particular disease is described by Drs. Frazell and Foote. The opinions expressed are at variance with those that you have printed.*

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To the Editor:—*I would like to comment on the answer in the Queries and Minor Notes section of* The Journal, *Jan. 7, page 89, in regard to Papillary Carcinoma of the Thyroid. The consultant replied with statements that are of a controversial nature and that hardly seem to reflect the majority of opinion of men interested in the field of head and neck cancer. In the case in question, a 38-year-old woman had developed palpable cervical nodes within four months after the removal of a pea-sized papillary adenocarcinoma of the thyroid. The consultant advises either no treatment or local excision of the involved nodes, with the allegation that "papillary carcinomas of the thyroid are of a low degree of malignancy, and patients often survive with them for 20 years or more or even indefinitely." The frequency of thyroid cancer and its mortality have not been settled. Dr. J. E. Sokal in* The Journal, *April 17, 1954, page 1321, asserts that thyroid cancer is an uncommon disease and that death will strike no more than 6 persons a year in a hypothetical community of 1 million people. While this survey is exhaustive, national in scope, and covers several decades, the statistical validity of the conclusions is open to question. Such articles, admirable in their intent, lull us inexorably into a false sense of complacency. There are numbers of recorded cases of mammary cancer, treated by simple mastectomy, that do not develop axillary metastases until 15 or 20 years later. There are even exceptional reports of neoplasms, such as neuroblastomas, that disappear spontaneously without treatment. However, it is unwise to be deluded by such protean phenomena. While survivals of patients with metastatic thyroid carcinoma exceeding 20 years have been recorded, these isolated examples are deluged by the overwhelming mass of deaths from this disease. Exception, too, may be taken with the opinion of Crile and co-workers, which is stated in the* Journal of Clinical Endocrinology and Metabolism (**15**:*1422, 1955*). *Dr. Crile advocates local excision of metastatic cervical nodes as they appear; in that same article he admits that biopsy or partial excision of a thyroid cancer often disseminates and renders*

it incurable. How then can a surgeon expect locally to excise malignant nodes without at least transecting the afferent lymphatics, often containing cancer cells, and also without "contaminating" uninvolved areas? In the case of the 38-year-old woman under question, it would appear that the tumor has already indicated its aggressiveness by virtue of its spread to the cervical nodes within 16 weeks of the initial surgery. One might certainly reconsider whether no treatment, or chasing the malignancy around the neck with local excision when it appears, is preferable to radical neck dissection.

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TO THE EDITOR:—*Regarding the advice offered on papillary carcinoma of the thyroid in* THE JOURNAL, *Jan. 7, page 89, the results of published data show that the majority of surgeons interested in thyroid cancer would agree that nearly every statement in your reply is wrong.*

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TO THE EDITOR:—*In* THE JOURNAL, *Jan. 7, page 89, the physician who posed the original question on the treatment of papillary carcinoma of the thyroid summarized the entire situation in his last three sentences. "When this question is posed to the young surgeons of the area, they say 'neck dissection unequivocably.' The older surgeons say 'pluck them when a group of glands appear' or, 'I have never seen anyone die from this type of cancer.' What is the real answer?" The answer depends entirely on whom you ask. Young surgeons, deeply imbued with enthusiasm for eradicating cancer regardless of consequences and having little experience with the natural history of papillary carcinoma of the thyroid, tend to answer exactly as the poser of the question stated. Most surgeons with long experience with this type of thyroid cancer recognize that it can be just as effectively treated by a well-planned resection of the groups of lymph nodes that are grossly involved. Dr. L. W. Sloan of the Presbyterian Hospital in New York states that in the long and carefully followed series of cases operated on in various ways at his hospital there is no difference in survival rate between those operated on conservatively and those subjected to the conventional radical operation, with removal of the sternocleidomastoid muscle. The long experience of Pemberton at the Mayo Clinic likewise indicates that the sternocleidomastoid muscle can be preserved, with as good results as when the conventional radical neck dissection is done. The same opinion is held by Dr. R. S. Dinsmore at the Cleveland Clinic and by many other experienced surgeons, including Oliver Cope of the Massachusetts General Hospital, Boston. The opposite point of view is held by surgeons of the Lahey Clinic and of the Memorial Hospital in New York.*

The following facts, however, are indisputable: First, there is no reported large and long-followed series of patients with papillary carcinoma treated by conventional radical neck dissection in which the results 5 to 20 years after operation are as good as in the reported series in which the patients have been treated by careful excision of the primary tumor and the grossly involved groups of lymph nodes. Second, there is no continuity of tissue planes between the thyroid and the lateral cervical region. Third, there is no such thing as a block dissection of the neck that encompasses the primary tumor and its zones of mediastinal, paratracheal, and lateral cervical metastasis in continuity. Fourth, in all cancers of the thyroid, except those rare tumors that are limited to the superior pole and metastasize along the superior thyroid vessels, the primary zone of metastasis is central and the nodes most commonly involved are those of the superior mediastinum and the ones that lie behind the thyroid and along the trachea and esophagus. Since these nodes lie directly on vital structures, they must be dissected free of them and cannot be resected en bloc. If the primary tumor and its primary lymph node metastasis must be dissected free of vital structures, it is not reasonable to insist on an en bloc resection of the secondarily involved lateral cervical nodes.

Fifth, only once in over 100 cases, and this in a woman who had had cancer for 37 years, have I seen the sternocleidomastoid muscle involved by direct extension from nodes of a papillary carcinoma. I have never heard of a case in which death occurred as a result of uncontrolled lateral cervical metastases. The most common cause of death is from central invasion of trachea, esophagus, and mediastinum from the primary tumor or its central and mediastinal metastases. The battle is won or lost in the central area of the neck. Sixth, the sternocleidomastoid muscle is of the greatest cosmetic importance to a young woman and should not be sacrificed merely for the convenience of the surgeon. Seventh, sacrifice of the 11th nerve, so common in the conventional neck dissection, results in shoulder drop, painful arthritic changes in the shoulder girdle, and often in incapacity for hard work. Eighth, adequate dissection of cervical nodes can be obtained without sacrifice of important muscles and nerves. Ninth, the natural history and zones of metastasis of papillary cancer of the thyroid are so different from those of cancers of the jaw that an operation that is effective for one is apt to be totally ineffective for the other. In many respects, papillary cancer of the thyroid resembles cancer of the lip, in that its metastases tend to be embolic and often can be controlled by discontinuous dissection of the primary tumor and the involved lymph nodes.

Tenth, metastases of some low-grade cancers of the thyroid (10 cases at present under observation) regress if enough desiccated thyroid is given to suppress the thyroid-stimulating hormone of the pituitary. Two patients who, five years ago, had diffuse metastases of a papillary carcinoma to the lungs are living and well today and have no evidence of cancer by x-ray or clinical examination. Six others have shown striking regression, and the rapid advance of two more has been stopped. Eleventh, in patients under 40 years of age who have cancer of the thyroid with involvement of cervical nodes, there may be mixtures of papillary and follicular carcinoma, but this does not alter the good prognosis. Even when predominantly follicular, these cancers behave like papillary carcinomas. Twelfth, my experience with 107 cases of papillary carcinoma of the thyroid has been published in detail in the November, 1955, issue of the Journal of Clinical Endocrinology and Metabolism. *Seventy-five per cent of these patients had metastatic cancer at the time of the operation. In a follow-up period that averages over five years, 20% have required a second small operation for removal of nodes outside of the field of the first operation. There were 71 patients who had had no previous biopsy of the thyroid or partial removal of the primary tumor. In only one of these primary cases was the sternocleidomastoid muscle removed. None of these patients, some of them followed from 15 to 18 years and many with 20 to 40 lymph nodes involved, has died of cancer, none has developed distant metastases since operation, and none at present has any demonstrable cancer in the neck or mediastinum. In this group, all of which have been followed and none lost to follow-up before five years have passed, conservative operations have been 100% effective in controlling the cancer. The routine use of 3 grains of desiccated thyroid daily probably has helped. It is likely that papillary cancer of the thyroid is dependent on thyrotropic hormone and that in many cases it is a reversible disease that resembles endometriosis more closely than autonomous cancer. Perhaps the original concept of lateral aberrant thyroid, although wrong in its expression of the etiology, was biologically close to the truth. Thirteenth, the records and slides of our patients are available to anyone who is interested in comparing them with those of patients treated by radical operations. Fourteenth, the burden of proof rests squarely on the surgeon who advises a mutilating operation for a disease that can be as well controlled by an operation that preserves the function and contour of the neck.*

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